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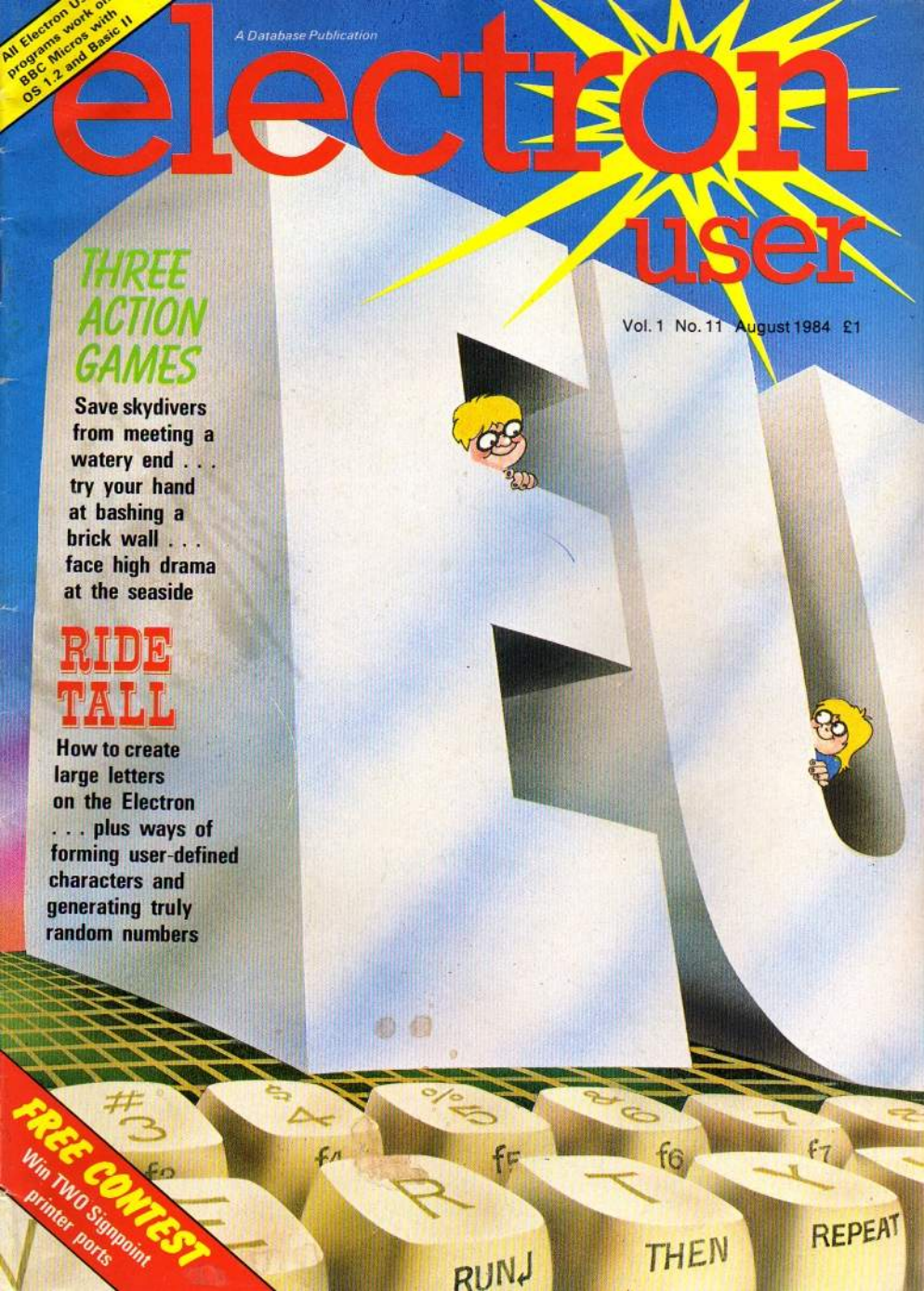

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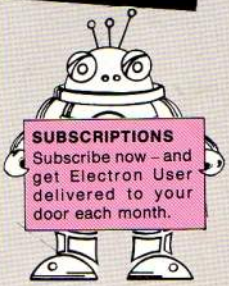

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electron user NEWS

Plus 1 games snag

GAMES fans who buy Acorn's Plus 1 add-on for their Electrons may be in for a rude shock.

It looks as if most non-Acornsoft games will refuse to run while the Plus 1 is attached to the micro.

The problem is that a specific joystick routine has to be included in the game software – and Acorn did not release details of this to other software houses.

So the independent games publishers simply went ahead and standardised on the joystick interface made by First Byte, who had sent them examples of this hardware in advance.

Electron User reader Bill Wales bought a Plus 1 for his children in June. But he soon discovered that he could not run two of the kids' favourite games – "Moonraider" and "Sea Wolf".

Contacted by *Electron User*, the games publishers – Micro Power and Optima Software – said they were still waiting for Acorn to send them Plus 1 units for evaluation.

But an Acorn spokesman said: "The Plus 1 cannot tell one piece of software from another. So there is no reason why it should affect the games".

High Street sales are booming

ACORN has hit back at rumours that all may not be well with Electron sales by ramping up production to 25,000 machines a month.

"The truth of the matter is that we are selling just as many as we can produce", a company spokesman told *Electron User*.

A survey of the leading High Street computer retailing chains – W.H. Smith, Boots and Dixons – has served to support Acorn's claim. For it revealed that to date the machine is enjoying healthy – if so far not spectacular – sales. But, more importantly, the big three all predict a boom in Electron sales before the end of the year.

Such is Boots confidence in the machine that it is soon to increase the number of branches where it is sold from 40 to 180.

"It is selling better than the Commodore 64 even now at a time of the year when the market is generally flat", says a company spokesman.

Over at W.H. Smith, marketing manager John Rowland announced that the company was selling one Electron for every two Sinclair Spectrums.

"Considering the machine began to arrive in any real quantity at a time when market demand overall was slow, it has done well", he said.

At Dixons head office, it was also good news for the Electron.

"It's going quite nicely, thanks very much", commented computer buyer Howard Smith. "Once the software problem has been ironed out, we believe the prospects will be very good.

"After all, it's software that sells hardware at the end of the day", he said.

Exit BBC Model A

AT long last, Acorn have confirmed presistent rumours about the future of the BBC Micro Model A.

From September they will produce no more of the cheaper, lower specification version of the Model B. The disapperance of the Model A has been forecast ever since the launch of the Electron last September.

Despite official denials, it was obvious that the Electron – especially when supplied with expansion units – would steal the market from the Model A.

As it is, the death of the Model A can only be good news for Electron users. More than anything else it confirms the strength of the Electron market.

Major boost from add-on

THE world of Electron peripherals looks set to be revolutionised with the arrival of an as-yet nameless add-on.

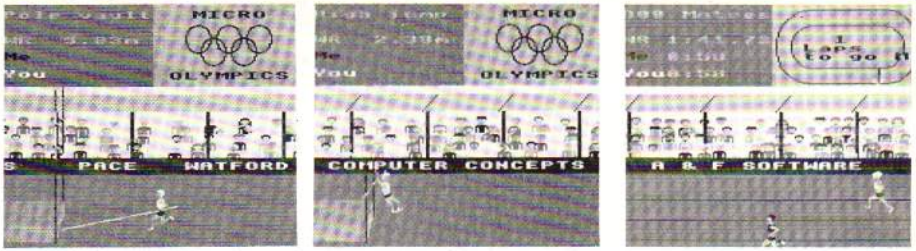
Produced by Northern Computers of Frodsham and due for release in early September, it promises to take the Electron further along the road to full BBC Micro status than any other peripheral.

Priced at £99, the unit contains the analogue to digital converter and parallel printer port that are becoming standard for Electron peripherals.

More importantly, it has the 1MHz bus and user port beloved of BBC Micro hardware enthusiasts. It also has a speech interface with a speech chip and four spare ROM sockets.

As a spokesman for Northern Computers said, "The interface contains nearly everything the Electron needs to give it the stature of a BBC Micro".

The unit will also have a connector which will allow a disc interface to be attached. The firm would not say when this would be available but hinted at a pre-Christmas launch.



Micro Olympics is making the running

MICRO Olympics, a new best selling computer game for the Electron and the BBC Micro, has achieved a media breakthrough by being the first software program to carry paid-for advertising.

A number of leading computer companies who saw the program being written asked if they could buy space on the hoardings that surround the track featured in the game.

Developed by Database Publications, it allows the computer to simulate the world's top athletes in 11 of the main Olympic track and field events.

In all cases – allowing for a slight random element – the computer achieves the current world record.

Ranging from the 100 metres to the hammer throw, it is accurate in all details from times to distances.

Players attempt to beat the computer and so establish a world record of their own.

"We were a little surprised when companies approached us to advertise in the game", admits Mike Cowley, a spokesman for Database. "But the more we thought about it, the more it was obviously a good idea.

"After all, it's the norm these days to see arenas for major sporting events carrying huge posters promoting companies.

"So we decided to allow them to buy space on our micro hoardings. And in doing so, we realised we had come in first ourselves".

Taking another Byte

FOLLOWING hot on the heels of the First Byte joystick interface comes a new printer interface from the same company.

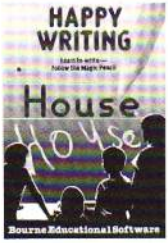
Housed in a small plastic box that matches the Electron, it slots onto the rear edge connector at the back of the micro.

It does not interfere with normal working, so can be left plugged in all the time.

"It's a bit cheaper than comparable interfaces", says First Byte's Ray Threadgold. "And it works with any printer".

He added that the £35 price tag was achieved through standardisation of parts.

"This means we can bulk-buy the parts and pass the saving on to the customer".



WRITING AID FOR TOTS

A PROGRAM for the Electron, "Happy Writing" from Bourne Educational Software, helps children in their first steps to writing, especially in forming letters.

A "Magic Pencil" helps children to understand where to start and which direction to take. Sound is used as an additional guide.

"Happy Writing" has been tried out in schools, where it has been shown to hold childrens' interest.

The package can be used to practise lower case or capital letters, or a set of words.

The word list can be readily changed, and the program features proportional spacing of words on the screen.

The program, aimed at 3 to 6-year-olds, costs £8.95 (cassette).

A BBC Micro version is available on disc.

Owners' Club extends Electron guarantee

BROADWAY Electronics has launched an Electron Owners' Club giving members priority servicing, discounts on accessories, and other benefits.

The move follows the success of their BBC Owners' Club 18 months ago, which now has 1,000 members.

Members of the new club will be able to extend their Electron's guarantee for a full year. This covers all parts, labour and servicing.

Work will be completed "while you wait" if possible. But if Broadway keep the machine more than two days, they will loan a replacement.

Other benefits of the club include 10 per cent off hardware and accessories, apart from micros, 15 per cent off software, 20 per cent off blank tapes, a club newsletter and special offers.

Membership is £28.75 for Electrons purchased from Broadway. For Micros bought elsewhere, membership costs £40.25.

Managing director Paul Vaughan said: "Many Acorn guarantees will be expiring soon and this is a very economical way to extend the cover.

"It can run either from the date the original warranty runs out, or from the date of membership. The discounts cover our range of Mushroom add-ons".

Already available is a combined printer and user port card. Complete with manual and software, including a screen dump routine, it allows the use of printers and joysticks.

On the way are an analogue port and an extension ROM card, opening the door to word processors and advanced graphics.

Northern success

THE Electron and BBC Micro User Show to be held in Manchester from August 31 to September 2 is already reported to be a runaway success.

As early as the end of June, virtually all the 90 stands available in the Renold Building at UMIST had been snapped up.

Acorn itself has booked an island of eight stands for its official display during the three day spectacular.

Micro Show is set to smash records

THE July Electron and BBC Micro User Show – the first to be held at Alexandra Palace, London – is set to smash all previous records.

Exhibitors have been clamouring to book space, and the final number of standholders is forecast to pass the 140 mark – some 20 more than the previous best.

Demand for advance tickets has also been heavy, running way ahead of previous pre-show sales figures.

"It looks as though we are going to have a bonanza", says Mike Cowley, spokesman for Database Publications, the show organisers.

"This is particularly pleasing as some people reckoned we had bitten off more than we could chew with such an enormous venue as the Alexandra Palace Pavilion".

Even before its opening three years ago, the building was being described by the architectural press as "a palace of light".

With an area of 4,600 square metres, a translucent roof 15 metres high spanning 36 metres, it is the largest fabric-covered building in Britain.

Due to this innovative design, it provides 3,620 square metres of clear floor space free from columns or other obstacles.

Set in 200 acres of parkland overlooking London, the Palace has ample parking facilities.

For those who want to leave their cars at home, the Palace can be reached easily by train.

Average journey time from Piccadilly Circus is 30 minutes.

On the underground the Victoria Line provides fast access to and from the West End and British Rail mainline stations – King's Cross, St. Pancras, Euston and Victoria.

Visitors travelling on the Victoria Line should change at Highbury and Islington for the BR suburban service.

Alexandra Palace can be reached by the Piccadilly Line from Heathrow Airport, West End and King's Cross mainline station.

The line serves Finsbury Park and Wood Green underground stations, which are also linked to the Palace by the London Transport W3 bus service. These run every seven to ten minutes, seven days a week and extra buses will be provided during the show.

The nearest station to Alexandra Palace is the British Rail Alexandra Palace on the main and suburban line from King's Cross and Moorgate.

Hare gets top security treatment

A MAJOR security operation is to be mounted at the Electron and BBC Micro User Show in London when an internationally famed gold artefact goes on display.

Known as the "Jewelled Hare of Masquerade", it has recently been acquired by a London software house which has agreed to loan it for the duration of the three day event.

Valued at £30,000, it will be under round-the-clock guard at Alexandra Palace, where it will provide a feature attraction for visitors.

Set with precious stones, the "Jewelled Hare" was originally the subject of a book called "Masquerade" written by Kit Williams in 1979.

It was the subject of an international treasure hunt undertaken by the book's readers around the world.

For "Masquerade" contained all the clues to find the hare which had been sealed in an earthenware jar and buried in a secret location by the author and television personality Bamber Gasgoigne. A man called Ken Thomas finally solved all the clues and dug it up in 1982.

When buried, it was valued by the author at £5,000. Three years later, when it was unearthed, its estimated worth had soared to more than £20,000.

Earlier this year, the precious item was bought by Haresoft Ltd. to launch a world-wide computer competition, with the hare as the prize.

A team of six programmers and two graphic designers has spent three months producing a find-the-treasure program, which they claim is not a game but a mind bending puzzle.

To give an equal chance to youngsters who cannot travel freely, the hare has not been buried this time. All the winner will have to do is solve the clues contained in the program to pinpoint its exact location.

Haresoft has produced the program in two parts – each costing £8.95 – and they will be released three months apart.

The first tape – Hareraiser Prelude – became available in the middle of June, with part two – Hareraiser Finale – due in mid-September.

Both tapes will be needed to find the location of the treasure.

To scupper the pirates the tapes include information that the average computer owner will not be able to reproduce. Should copies be taken, the user will not be aware that all data is not present.

PLUS 1 IS IN THE PIPELINE

YOU may have to wait a little longer to get your hands on a Plus 1, Acorn's long-awaited hardware expansion unit for the Electron.

Dealers are reporting considerable delays in meeting the demand.

But Tom Hohenberg, Acorn's marketing director, brushes aside suggestions that there are production snags.

"We only launched the Plus 1 at the end of May", he told *Electron User*. "All the distributors and major retail chains have ordered it, and thousands of Plus 1s are now coming off the production lines".

And he added that 2,800 Plus 1s were ordered in advance of the launch.

Meanwhile, a spokesman for W.H. Smith said they had placed an order for around 500 units – enough to put two in each of their computer shops.

Part six of PETE BIBBY's introduction to programming

Control your loops – one STEP at a time!

WE'LL be taking a further look here at the FOR... NEXT loops which we learnt about last time. First, however, let's recap on what we've covered in the first five articles in the series.

We started on Page 10 of the February edition where we made the acquaintance of the PRINT command which we've been using to good effect ever since.

We saw how we could use it to add two numbers together and also to get the Electron to say "Hello" to us.

We learnt that the Electron uses an asterisk * as the multiplication sign and the diagonal / as the division sign.

All this was in command mode, the Electron responding immediately to whatever we typed in.

Page 10 of the March issue took us into the world of simple programs. We saw that a computer program was a series of numbered commands which the Electron obeyed in order when we entered RUN.

We found out how to LIST them and how to wipe them from the micro's memory by typing NEW.

New lines could be added to programs by simply typing them in, while whole lines could be deleted by entering that particular line number and pressing the Return key.

We learnt the reason for numbering the lines in steps of 10 – so we could slip new lines in between them. We also found out how to use the Delete key to alter program lines before we'd actually entered them into the Electron's memory by pressing Return.

Finally, we saw how CLS could be used to clear the screen.

Not content with all this knowledge, Page 8 of the April issue saw us pressing on. We covered the REM statement, which allowed us to make remarks that the Electron ignored.

We did a little more work with strings, combinations of letters and numbers that we put inside inverted commas and that the Electron treats as one lump.

We added to our knowledge of the PRINT command, seeing how the punctuation that follows it affects the screen display it produces.

And it was this month that we learnt how to use the LET command to assign variable names to strings.

Having dealt with that, it then turned out that we didn't need to use LET – the Electron assumed it was there anyway.

Those who persevered until Page 10 of the May issue were rewarded with the secrets of assigning values to numeric variables.

There was also a demonstration of how to use numeric variables for simple maths. The concept of using meaningful variable names was raised and we explored the rules that the Electron requires for variable names.

Page 10 of the June issue introduced the very powerful INPUT statement, which is used to enter values into programs while they are actually running.

We explored the way it works and saw how it is always wise to print a message explaining clearly which input a program requires.

Finally July, Page 10, saw us going round in circles following the workings of simple FOR... NEXT loops.

We explored the way that these loops and the INPUT statement combine as a powerful programming tool, and I left you with two problems.

The first is shown by Program I, July's Program X. Why, I asked, was *loop* equal to 6 and not 5, as we might have expected?

```
10 REM PROGRAM I
20 REM OLD PROGRAM X
30 FOR loop=1 TO 5
40 PRINT"Pass number";loop
50 NEXT loop
60 PRINT "Final loop is ";
   loop
```

The answer is that the NEXT statement adds one to the value of *loop* each time around and the Electron then compares this with the upper limit of the loop.

This upper limit is the value that follows the TO in line 30. If the value is less than or equal to this limit (in this case if the value is 5 or less) the program goes round the loop again.

So when the value of *loop* gets to 5, after having been 1, then 2, 3 and 4, the loop is repeated once more. Now when the program gets to the NEXT, *loop* is increased by one and so *loop* is equal to 6.

The Electron then compares this value with the upper limit that has been set for the FOR... NEXT loop. In this case *loop* now has the value 6, while the upper limit of the loop is given as 5.

Since this is the case the Electron knows that it has finished going round the loop and so it goes on to the following line, line 60, which prints out the unexpected value for *loop*.

Work it out on a piece of paper if you can't follow that. It's one of those things that can be difficult to understand until you grasp it and then it's suddenly obvious and you can't see how you ever had any difficulty.

In fact that could be said about most things in programming.

Program II is a lot easier to sort out.

```
10 REM PROGRAM II
20 REM OLD PROGRAM XI
30 FOR loop=5 TO 1
40 PRINT "Something's wrong
   here!"
50 NEXT loop
```

Here the limits that I've given to the loop are the wrong way round. There's no way that the loop variable *loop* can go from 5 to 1 in steps of one at a time.

When the program enters the loop the value of *loop* was set to 5 by line 30. It then went on to line 40 which PRINTed out the message and line 50 added one to the value of *loop*, which thus became 6.

Since 6 is greater than the upper limit of the loop variable (which line 30 set to 1) the program stopped going round the loop and, since there are no other lines, it stopped

completely.

This may seem a stupid mistake but it can happen, especially when one or both of the limits of the loop control variable are given as variables rather than figures.

Program III is an example of using a variable to control the limits of a loop.

```
10 REM PROGRAM III
20 INPUT "How many numbers
   are there",how_many
30 total=0
40 FOR loop=1 TO how_many
50 INPUT "Enter number",n
   umber
60 total=total+number
70 NEXT loop
80 PRINT "The total of the
   ";how_many;" numbers is
   ";total
```

This is a modification of the July program which added together 10 numbers. There's no reason why it should be limited to only ten, it could be used to add together any number of numbers.

This is achieved by using a variable *how_many* after the TO that defines the limits of the FOR . . . NEXT loop.

Before the program reaches the loop it makes the Electron ask us how many numbers we are going to type in.

It then gives this value to the variable *how_many* and this sets up the loop for that number of entries. Try it and you'll see how using variables to define the limits of FOR . . . NEXT loops makes programs much more flexible.

Now take a look at Program IV.

```
10 REM PROGRAM IV
20 FOR count= 1 TO 9
30 PRINT count
40 NEXT count
```

Not exactly rivetting is it? All it does is produce a sequence of numbers from 1 to 9.

However suppose that you didn't want the series 1, 2, 3 and so on to 9 but wanted only the odd numbers, 1, 3, 5 and so on. Can you do it with a FOR . . . NEXT loop? The answer is yes, as Program V shows.

```
10 REM PROGRAM V
20 FOR count= 1 TO 9 STEP 2
30 PRINT count
40 NEXT count
```

This prints out the required series, doing it by using the keyword STEP to modify the way that the loop control variable is increased.

Up until now we've been used to FOR . . . NEXT loops where the loop control variable is increased by one every time round the loop.

However, as Program V showed, we're not stuck with this. By using STEP we can tell the Electron how much to increase the control variable by each time round the loop.

In Program V the STEP was followed by the figure 2 and so the loop control variable *count* was increased by two every time around.

The FOR . . . NEXT loop works in exactly the same way as before, repeating over and over until the loop control variable exceeds its upper limit.

In fact you could say that our FOR . . . NEXT loops have always had a step factor, STEP 1, which the Electron assumes and so we haven't had to type it in.

In Program V all that's different is that we wanted increments of two so we used STEP to achieve this.

Try putting different numbers after the STEP of line 20 and see how it works in practice. Like most things in the world of micros, until you've done it for yourself it won't really sink in.

The steps that the control variable is increased by don't have to be whole numbers, as Program VI shows.

```
10 REM PROGRAM VI
20 FOR count= 1 TO 9 STEP 0
   .5
30 PRINT count
40 NEXT count
```

Here the increment is fractional, yet the loop still works in the normal manner. Again, try it out with your own fractional values after the STEP and see how *count* varies.

As Program VII demonstrates, the step can even be negative. In this case the loop repeats until the final value of the loop variable *count* is less than the final limit of 1.

Notice that the limits are from 9 to 1. See what happens if you put the limits in the other way around, by mistake.

```
10 REM PROGRAM VII
20 FOR count= 9 TO 1 STEP -
   1
30 PRINT count
40 NEXT count
```

So far the examples of the use of STEP have been fairly academic. Program VIII shows the use of STEP in a more realistic situation. It's the kind of use you'll find for it in your own programs.

```
10 REM PROGRAM VIII
20 MODE 2
30 FOR line=0 TO 1279 STEP
   64
40 MOVE line,0
50 DRAW line, 1023
60 NEXT line
```

Here the value of step is chosen in order to space the lines. Try out different values and see the results.

This is where the STEP facility comes into its own, allowing values to be increased or decreased by a specified amount each time round a loop. As you gain more programming experience you'll realise how useful it can be.

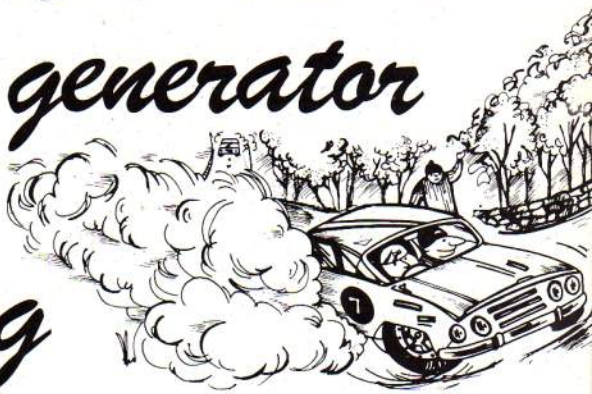
And that's all for this month. Next time we'll be moving onto a new aspect of FOR . . . NEXT loops. For a preview take a look at Program IX.

```
10 REM PROGRAM IX
20 FOR  outer=1 TO 3
30 PRINT "Outer loop number
   ";outer
40 FOR inner=1 TO 3
50 PRINT "Inner loop ";inne
   r
60 NEXT inner
70 NEXT outer
```

Loops within loops. Can you figure out what's happening?

We'll go into it in the next article.

Get that random number generator really motoring



By DAVE ROBINSON

SOONER or later when writing programs there is a need to generate a series of numbers, all different and in a random order.

At first thought this would seem straightforward using the RND facility and Program I would seem to fit the bill:

```
10REM PROGRAM I
20DIM number(10)
30FOR I=1 TO 10
40number(I)=RND(10)
50NEXT I
60REM Print out numbers s
elected.
70FOR I=1 TO 10
80PRINT number(I)
90NEXT I
```

Unfortunately, if you run Program I, you will find that the RND function on line 40 will quite happily choose the same number more than once – in the range of 1 to 10.

What is needed is a check routine to stop this happening.

Program II will do this checking.

The FOR . . . NEXT loop – lines 90 to 110 – checks back through all the previous numbers to see if the new number, from line 60 has been selected before.

If it has, then the flag *match* is set to TRUE. The REPEAT . . . UNTIL loop – lines 60 to 120 – is then repeated until a new number is found that has not been used before.

The TIME variable – line 30 – is set to zero to find the time the program takes to select 10 random numbers, using the routine in Program II.

The actual time will vary each time the program is run depending on how many times the repeat loop is called. Typical times are around one second.

This time is probably acceptable if only 10 numbers are needed. But if 100 or more are required, the time becomes quite long.

It takes Program II nearly three minutes to do 100 numbers – how can we improve this?

One method would be to keep a record of each number used. This makes it possible to quickly check each new number chosen by the RND function against those previously stored. This saves doing comparisons against all previous numbers.

Program III does this.

This time a "used" array records whether or not a particular number has been chosen.

It does this by being initialised to FALSE (the number 0) at the beginning of the program – lines 40 to 60 – and reset to TRUE (the number –1) each time a random number is stored in the *number* array – line 10.

The REPEAT . . . UNTIL loop – lines 80 to 100 – will check each subsequent random number chosen before allowing it to be added to the *number* array.

The FOR . . . NEXT loop –

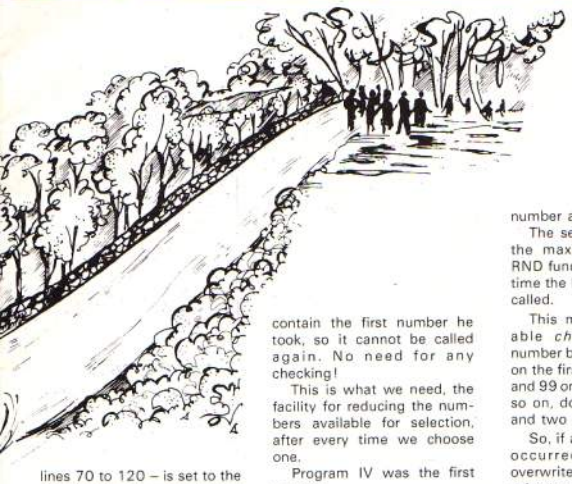
```
10REM PROGRAM II
20DIM number(10)
30TIME=0
40number(1)=RND(10)
50FOR I=2 TO 10
60REPEAT
70match=FALSE
80number(I)=RND(10)
90FOR J=1 TO I-1
100IF number(I)=number(J)
THEN match=TRUE
110NEXT J
120UNTIL match=FALSE
130NEXT I
140PRINT TIME/100;"seconds
"
150REM Print out numbers s
elected.
160FOR I=1 TO 10
170PRINT number(I)
180NEXT I
```

Program II

```
10REM PROGRAM III
20DIM number(100) ,used(1
00)
30TIME=0
40FOR I=1 TO 100
50used(I)=FALSE
60NEXT I
70FOR I=1 TO 99
80REPEAT
90number(I)=RND(100)
100UNTIL used(number(I))=F
ALSE
110used(number(I))=TRUE
120NEXT I
130I=0
140REPEAT
150I=I+1
160UNTIL used(I)=FALSE
170number(100)=I
180PRINT TIME/100;"seconds
"
190REM Print out numbers s
elected.
200X=4
210FOR I=1 TO 100
220PRINT number(I);
230NEXT I
```

Program III

MATHS workout



lines 70 to 120 – is set to the total less one because the last number can only have one value, and it is more efficient to check through the "used" array to see which subscript is still FALSE rather than wait for the RND function – line 90 – to find it.

If you run Program III, you will find the speed has increased considerably. 100 numbers taking around four seconds and 10 numbers 0.35 seconds.

I say *around* because the two repeat loops will be called a different number of times depending on the random numbers chosen.

The variable @% on line 200 is used to space out the numbers across the screen. See the User Guide for more details.

You can see that the improvement in time for 10 numbers is probably not worth the extra programming or memory used. For 100 numbers or more it may be considered.

Once on the pursuit of speed I realised that the one stumbling block was having any kind of check routine each time a new number is chosen by the RND function. What was needed was a method that made this checking unnecessary.

Consider, for a moment, what a bingo caller does. He takes a number from a random generating machine calls it out and then puts it on a board.

After this he takes another number from his machine – but now the machine does not contain the first number he took, so it cannot be called again. No need for any checking!

This is what we need, the facility for reducing the numbers available for selection, after every time we choose one.

Program IV was the first attempt:

```
  10REM PROGRAM IV
  20DIM number(100) ,select
(100)
  30TIME=0
  40FOR I=1 TO 100
  50select(I)=I
  60NEXT I
  70FOR I=100 TO 2 STEP-1
  80choose=RND(I)
  90number(I)=select(choose
)
  100select(choose)=select(I
)
  110NEXT I
  120number(I)=select(1)
  130PRINT TIME/100;"seconds
"
  140REM Print out numbers s
elected.
  150@%=4
  160FOR I=1 TO 100
  170PRINT number(I);
  180NEXT I
```

This time the numbers available for selection are first initialised into a select array – lines 40 to 60. The FOR . . . NEXT loop – lines 70 to 110 – then transfers these numbers, in a random order, into the number array.

The secret lies in reducing the maximum value of the RND function on line 80 each time the FOR . . . NEXT loop is called.

This means that the variable *choose* can be any number between one and 100 on the first pass; between one and 99 on the second pass and so on, down to between one and two on the last pass.

So, if after the transfer has occurred – line 80 – we overwrite the contents of the select array, subscript number stored in choose, with the contents from the same select array but subscript stored in the loop counter I (100 on the first pass, 99 on the second pass etc.).

This means that even if the variable *choose* was the same value in any subsequent pass, the contents of the select array being transferred would be different.

The FOR . . . NEXT loop – lines 70 to 110 – stops at I=2 because you must avoid letting *choose*=RND(1).

Otherwise *choose* would equal a decimal number less than one, and anyway there is only one number left in the select array. Line 120 transfers this to the number array.

Further thought showed that this technique can be modified to use a single array for both selection and storage of numbers. This saves considerably on memory if a lot of random numbers are required.

This is done by using a single variable, *temp*, to hold the chosen number while the transfer – line 110, Program V – takes place. The chosen number can then be put into the end of the array. Look at Program V and you will notice that I've used integer variables with the % sign. This will by itself increase the speed of any program.

```
  10REM PROGRAM V
  20DIM nueber%(100)
  30TIME=0
  40FOR I%=1 TO 100
  50nuaber%(I%)=I%
  60NEXT I%
  70FOR I%=100 TO 2 STEP-1
  80chooseX=RND(I%)
  90tempX=nuaberX(chooseX)
  100nuaberX(chooseX)=nuaber
%(I%)
  110nuaber%(I%)=temp%
  120NEXT I%
  130PRINT TIME/100;"seconds
"
  140REM Print out nuabers s
elected.
  150@%=4
  160FOR I%=1 TO 100
  170PRINT nuaber%(I%);
  180NEXT I%
```

If you wish to go to the limits of the machine efficiency, then the answer is to use single letter integer variables and put all of the program on one statement line separated by colons with no unnecessary spaces.

See Program VI. The program is now difficult to read but essentially is the same as Program V.

```
  10REM PROGRAM VI
  20TIME=0
  30DIMNX(100):FORI%=1TO100
:NX(I%)=I%:NEXT:FORI%=100TO2
STEP-1:CX=RND(I%):TX=NX(CX):
NX(CX)=NX(I%):NX(I%)=TX:NEXT
  40PRINT TIME/100;"seconds
"
  50REM Print out nuabers s
elected.
  60@%=4
  70FORI%=1 TO 100
  80PRINT NX(I%);
  90NEXT I%
```

PROGRAM	NUMBERS SELECTED		
	10	100	1000
II	1-2sec	2-3min	
III	.2-.3sec	4-6sec	1-1.5min
IV	.17sec	1.62sec	16.9sec
V	.13sec	1.3sec	13.15sec
VI	.11sec	1.06sec	10.74sec

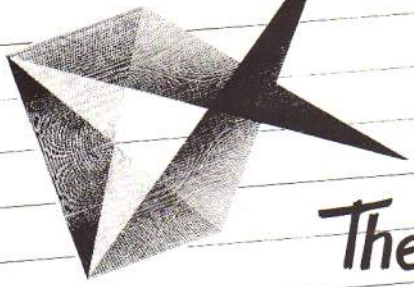
Figure I: Running times

● *Program running times are shown in Figure I.*

Notebook Part 7

THIS month's program comes from Mrs S.M. PRICE of Chinley. It uses the DRAW and MOVE commands to draw lines that combine to form an almost solid pattern.

The original program as sent in didn't have lines 130, 140 and 150. I added these to get a fuller effect. Try leaving them out to see another pattern.



There's a pattern to it

Line No.	Description
10,20	These just identify the program and its author.
30	Puts the Electron in Mode 1. Try the other graphics modes, 0, 2, 4 or 5 for a different effect.
40	Switches off the flashing cursor.
50,60	These change the foreground and background colours to magenta and cyan respectively.
70	Tells the Electron to clear the graphics area to the chosen background colour.
80	Tells it to draw the lines in the chosen foreground colour.
90,160	These lines form a FOR . . . NEXT loop. The variable *top* goes up in STEPs of 10 each time round the loop. Try changing the step for different effects.
100	Positions the graphics cursor at the point with coordinates 100,100. This happens each time round the loop, so it's a fixed point.
110	The Electron now draws a line from 100,100 to the point whose coordinates are *top*, 1000. Each time round the loop the X coordinate, as defined by *top*, is increased by 10 This moves the point that the line is drawn to across the screen to the right.
120	Joins the last point to the fixed point 1179,100 every time round the loop.
130-150	These lines do the same job as the last three did, only with different coordinates. Now the moving point travels from left to right across the bottom of the screen. The fixed points that are joined to this moving point are at the top left and right of the display.
170	This line just forms an endless loop, hiding the prompt.

```
10  REM LINES AND PATTERNS
20  REM BY S.M.PRICE
30  MODE 1
40  VDU 23,1,0;0;0;0;
50  VDU 19,1,5;0;
60  VDU 19,128,134;0;
70  GCOL 0,128:CLG
80  GCOL 0,1
90  FOR top=100 TO 1179
    STEP 10
100 MOVE 100,100
110 DRAW top,1000
120 DRAW 1179,100
130 MOVE 100,1000
140 DRAW top,100
150 DRAW 1179,1000
160 NEXT top
170 REPEAT UNTIL FALSE
```

Mode select 2

Colour changes

Moves top point across screen to the right

Moves bottom point across screen to the right

FOR..NEXT loop that draws all the lines

Endless loop Press Escape!

Trevor Roberts

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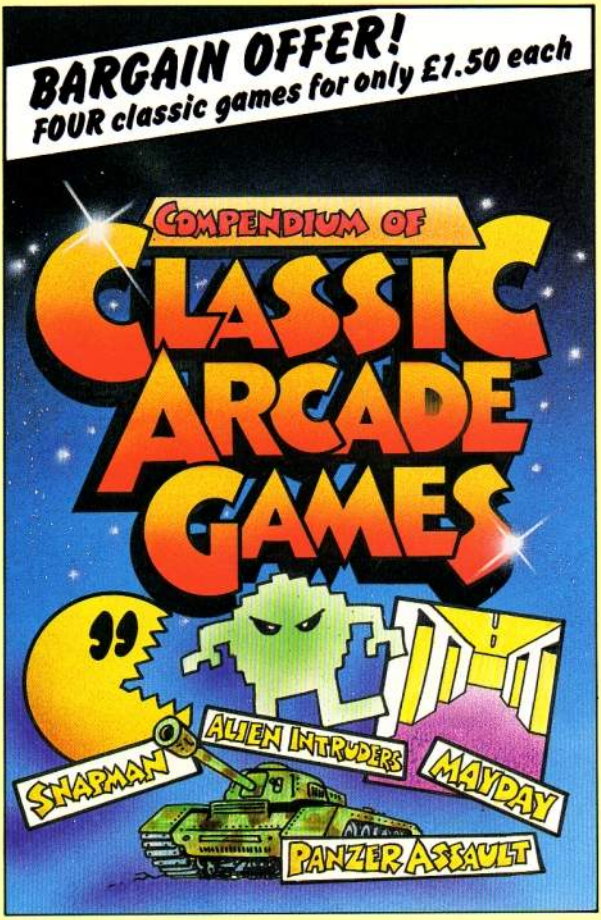

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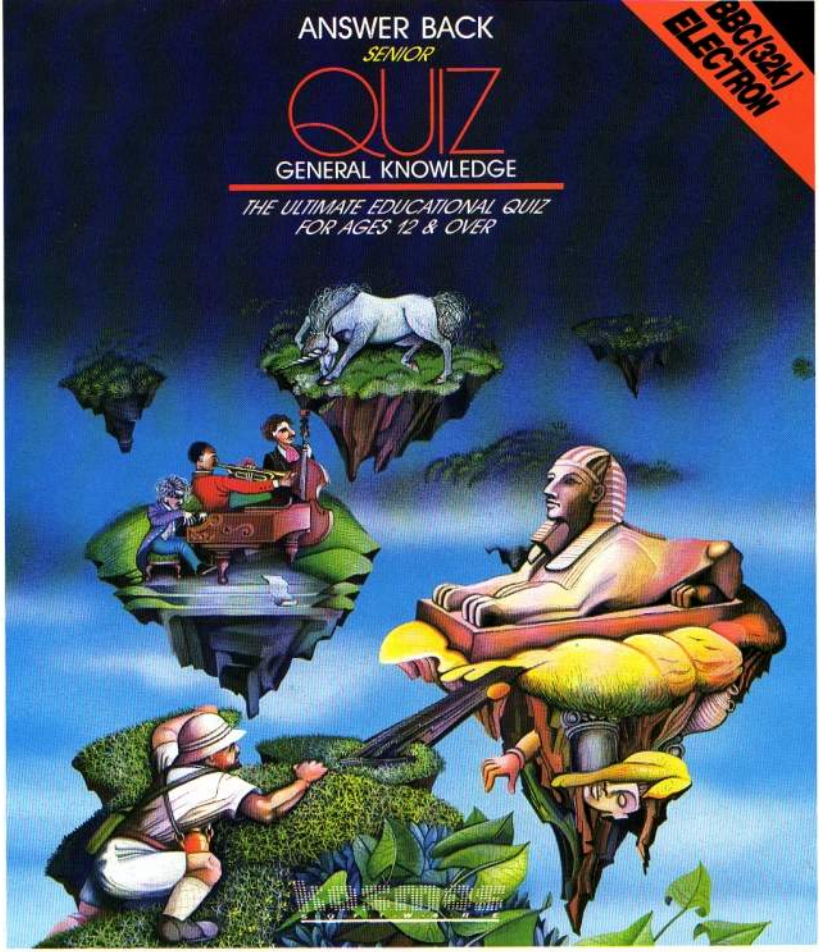

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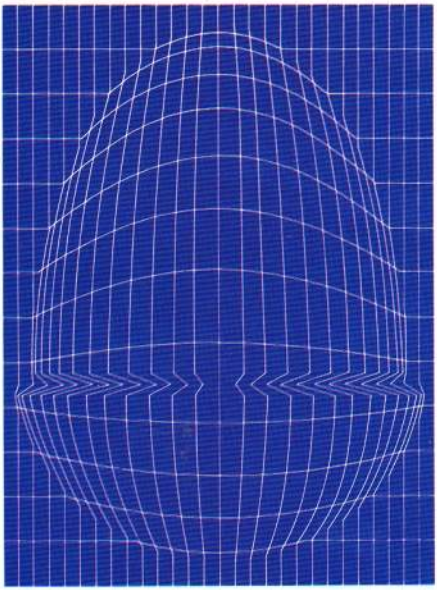

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JOHN WOOLLARD shows how to make your text . . .

RIDE

THIS article explains the development of a routine to make any computer character appear as large as the screen. The routine will allow the height of the characters to be 8, 16, 24 or 32 screen lines high.

I was first given the incentive to solve the problem when a colleague attempted to draw (PLOT) a series of numbers.

Each number had to be read from a standard TV screen by pupils at the back of a large classroom and had to be at least eight screen lines or 256 points high.

To design each character individually using PLOT statements took as long as the development of this single routine that will generate all computer characters.

The short cut to creating giant letters is to use the actual shapes of the character matrices stored in ROM and magnify them.

Each character is stored and displayed as a 8 x 8 matrix of dots. The shapes of the standard characters are stored as eight bytes, one for each row.

For example the letter A is shown in Figure I.

The characters can be changed or produced using VDU 23. For example, character 65 can be changed using:

```
VDU 23,65,16,56,108,
68,124,198,130,0
```

(See Pages 109 and 110 of the Electron user guide.)

You can find out the actual shape of a character stored in ROM by counting the dots on the screen. But the Electron has a much better and faster method.

Using the OSWORD CALL (A%=10) reads the matrix of a character and places it in RAM at a location specified by the values stored in X% and Y%.

For example the routine:

```
OSWORD=&FFF1:A%=10:X%=&70
:Y%=&0:?&70=ASC("A")
:CALL OSWORD
```

Location	&70	&71	&72	&73	&74	&75	&76	&77	&78
Value	65	60	102	102	126	102	102	102	0

Figure II: Character locations

places the eight matrix values of the character A in the locations &71 through to &78.

Note that the character to be analysed is placed in location &70. That particular area of RAM was chosen because it is safe for machine code programs. (See the user guide, Page 214.)

The contents of those locations can be examined using the instruction PRINT ?&71 or PRINT ?&72 etc.

The results shown in Figure II should be obtained, providing that the shape of A has not been changed.

These values can now be used to construct the large character shapes. This can be done in Basic *chr%*=?&71 or in assembly language LDA&71:STA*chr%*

The next problem is to translate each byte of the matrix into a line of eight characters. Looking at the letter A, the first value (?&71) is 60 and must be translated into this line of characters:

space space blob blob blob blob space space

What should the blobs be? The easiest move is to define CHR$255 to be the blob using VDU23.

```
VDU23,255,255,255,255,
255,255,255,255,255
```

gives a solid square blob whereas:

```
VDU 23,255,85,170,85,
170,85,170,85,170
```

gives a shaded blob.

We must now turn to exponentials and Boolean logic – but don't despair, it's not that bad! – to discover the relationship between the row numbers and the pattern of blobs. This is shown in Figure III.

A routine in Basic that will determine whether it should be a blob or a space by examining the binary structure of the number is shown in Program I.

Please note that this is not the simplest way to produce this result but it shows clearly the steps that have to be taken to get from the number to the row of spaces (CHR$32) and blobs (CHR$255).

It would be better to use VDU instead of the PRINT CHR$ and ;.

The AND operator com-

1										
2	6	3	1							
8	4	2	6	8	4	2	1			
–	–	●	●	●	●	–	–	32+16+8+4	60	(&3C)
–	●	●	–	–	●	●	–	64+32+4+2	102	(&66)
–	●	●	–	–	●	●	–	64+32+4+2	102	(&66)
–	●	●	●	●	●	●	–	64+32+16+8+4+2	126	(&7E)
–	●	●	–	–	●	●	–	64+32+4+2	102	(&66)
–	●	●	–	–	●	●	–	64+32+4+2	102	(&66)
–	●	●	–	–	●	●	–	64+32+4+2	102	(&66)
–	–	–	–	–	–	–	–		0	(&0)

Figure I: The character A

TAIL

pares the variable, or constant, on the left hand side with the variable, or constant, on the right hand side. That comparison is made in binary.

For example, the statement PRINT 53 AND 105 will produce 33!

53 = 00110101
105 = 01101001
AND 00100001 =33

With AND the answer has a 1 if both the first number AND the second number has a 1. If either number is zero or both are zero then the result is zero.

Each bit of the eight bit number is considered separately. In our program above *number%* is compared with these numbers in turn:

2^7 = 128 = 10000000
2^6 = 64 = 01000000
2^5 = 32 = 00100000
2^4 = 16 = 00010000
2^3 = 8 = 00001000
2^2 = 4 = 00000100
2^1 = 2 = 00000010
2^0 = 1 = 00000001

If *number%* has a 1 in the same position as the 2^7 then the result is greater than zero and a blob is printed. If it has not then the result is zero and a space is printed.

To simplify the program a loop can be used. See Program II.

```
10REM PROGRAM I
20VDU23,255,255,255,255,2
55,255,255,255,255
30REPEAT
40INPUTnumber%
50VDU11
60IF(2^7ANDnumber%)THENPR
INTCHR$255;ELSEPRINTCHR$32;
70IF(2^6ANDnumber%)THENPR
INTCHR$255;ELSEPRINTCHR$32;
80IF(2^5ANDnumber%)THENPR
INTCHR$255;ELSEPRINTCHR$32;
90IF(2^4ANDnumber%)THENPR
INTCHR$255;ELSEPRINTCHR$32;
100IF(2^3ANDnumber%)THENPR
INTCHR$255;ELSEPRINTCHR$32;
110IF(2^2ANDnumber%)THENPR
INTCHR$255;ELSEPRINTCHR$32;
120IF(2^1ANDnumber%)THENPR
INTCHR$255;ELSEPRINTCHR$32;
130IF(2^0ANDnumber%)THENPR
INTCHR$255;ELSEPRINTCHR$32;
140PRINT;number%
150UNTIL FALSE
```

Program I

```
10REM PROGRAM II
20VDU23,255,255,255,255,2
55,255,255,255,255
30REPEAT
40INPUTnumber%
50VDU11
60FORacross%=7TO0STEP-1
70IF(2^across%ANDnumber%)
THENVDU255ELSEVDU32
80NEXTacross%
90PRINT;number%
100UNTIL FALSE
```

Program II

We are now in a position to construct the whole procedure following this algorithm:

1: Store the variables necessary:
character to be printed
horizontal TAB position
vertical TAB position
At a later stage a magnification factor will be used.

2: Record POS and VPOS of cursor.

3: Use OSWORD A%=10 to determine the matrix of the character to be printed.

```
10REM PROGRAM III
20REPEAT:PROCgep(0,0,GET
,1):UNTILFALSE
30DEFPROCgep(htab%,vtab%
,chr%,size%)
40LOCALpos%,vpos%,across%
,down%,mag1%,mag2%,mode%,err
or$
50vpos%=VPOS:pos%=POS:err
or$=""
60VDU23,255,255,255,255,2
55,255,255,255,255
70PRINTTAB(0,0)"TAB(79);
80IFPOS=79THENmode%=80
90IFPOS=39THENmode%=40
100IFPOS=19THENmode%=20
110IFsize%<10Rsize%>4THENe
rror$="size% out of range"
120IF(size%+8)+htab%)mode%
THENerror$="shape too far ri
ght"
130IF(size%+8)+vtab%)32THE
Nerror$="shape too low down"
140IFchr%<320R(chr%)127AND
chr%<224)THENerror$="chr% ou
t of permitted range"
150IFerror$<>""THENPRINTA
B(0,0)"ERROR! "+error$:STOP
160?&70=chr%:A%=10:X%=&70:
Y%=0:CALL&FFF1
170FORdown%=0TO7
180FORmag1%=1TOsize%
190PRINTTAB(htab%,vtab%+si
ze%*down%+mag1%);
200FORacross%=7TO0STEP-1
210FORmag2%=1TOsize%
220IF2^across%AND?(&71+dow
n%)THENVDU255ELSEVDU32
230NEXT:NEXT:NEXT:NEXT
240PRINTTAB(pos%,vpos%);
250ENDPROC
```

Program III

4: Use nested loops to analyse and print blobs of the character.

5. Reset cursor position.

The procedure is contained in Program III.

The following points should be noted:

Line 40 defines all LOCAL values. This is most important if the procedure is to be treated as a utility and incorporated into a range of programs. It prevents double use of a variable.

Line 60 sets CHR$255 to be a square solid blob. However any standard charac-

60 is equal to	space	space	blob	blob	blob	blob	space	space	
	0	0	1	1	1	1	0	0	
60 in binary is	0x2^7	0x2^6	1x2^5	1x2^4	1x2^3	1x2^2	0x2^1	0x2^0	
	0 +	0 +	32 +	16 +	8 +	4 +	0 +		=60

Figure III: How 60 defines a row

From Page 19

ter or defined character can be used by changing line 220. For example:

```
220IF2^across% AND
?(&71+down%) THEN
VDU#% ELSE VDU32
```

produces # signs instead of square blobs. An interesting development is to replace 255 with *chr%*. This makes the blobs the same as the large shape being printed. (If a letter F was being printed it would be made up of Fs.)

To generate the ^ sign press the cursor left key with the shift pressed down.

Lines 70 to 150 are not necessary for the successful running of the procedure. However they have two functions.

They prevent unexpected or unwanted displays and therefore help to diagnose programming errors. They also serve to illustrate the function of the four variables passed to the procedure.

Lines 70 to 100 determine

```
  10REM PROGRAM IV
  20REPEAT:PROClgep(0,0,GET
,1):UNTILFALSE
  30DEFPROClgep(htab%,vtab%
,chr%,size%):LOCALpos%,vpos%
,across%,down%,mag1%,mag2%:v
pos%=VPOS:pos%=POS:VDU23,255
,255,255,255,255,255,255,255
,255:?&70=chr%:A%=10:X%=&70:
Y%=0:CALL&FFF1
  40FORdown%=0TO7:FORmag1%=
1TOsize%:PRINTTAB(htab%,vtab
%+size%*down%+mag1%);:FORacr
oss%=7TO0STEP-1:FORmag2%=1TO
size%:IF2^across%AND?(&71+do
wn%)THENVDU255ELSEVDU32
  50NEXT,,,:PRINTTAB(pos%,v
pos%);:ENDPROC
```

Program IV

the number of characters per line. The variable *mode%* holds that number.

The *size%* variable must not be greater than 4 because the enlargement would be too great and overfill the screen.

The range of valid *chr%* must be set to prevent OSWORD being called to characters not held in RAM. If the number of redefinable characters has been increased by exploding the memory (see Pages 93, 94, 95 and 282 of the user guide) the range set on line 140 must be changed.

The final line of the error trapping section stops the program if an error exists. This whole section is only useful in the program development stage.

Lines 70 to 150 should be removed to save memory and reduce loading time in the final version of a program.

The OSWORD call A%=10 on line 160 is explained on Pages 240-242 of the user guide.

Finally line 240 returns the cursor to its original position before the procedure was entered.

Program IV shows the minimum code required to write the procedure in Basic.

Now try to make the procedure do some work for you.

For instance, to print EU at the top left hand side of the screen type:

```
PROClgep(0,0,69,1):
PROClgep(0,0,85,1)
```

Then Return.

To clear a letter after printing it use:

```
PROClgep(0,0,32,1)
```

(Note: The ASC of a blank space is 32.)

Finally, to print every possible character in turn use the procedure with this short program. Remember, you have to press the space bar to expose each letter.

```
1 REM PROGRAM V
2 FOR k=33 TO 126
3 PROClgep(0,0,32,1)
4 PROClgep(0,0,k,1)
5 REPEAT:UNTIL GET=32
6 NEXT k
7 END
```

Program V

Don't forget, the displays are not as good in the text modes (Mode 3 and Mode 6) as in the graphic modes.

Now no one need say they cannot see the writing!

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From Stephen Byfield, Wokingham

```
10 SOUND 1,-13,RND(123),0
20 GOTO 10
```

TRACTOR

From Michael Smallbone, Thorpe-Le-Soken, Essex

```
10 SOUND 0,-15,20,50
20 ENVELOPE 1,20,24,35,34,34,
   23,34,126,0,0,-126,126,126
30 SOUND 1,1,50,20
40 SOUND 1,-15,89,1
50 SOUND 17,-15,8,1
60 GOTO 10
```

TELEPHONE RINGING

From James Harvey, Nottingham

```
10 REPEAT
20 FOR I=1 TO 5
30 SOUND 1,-15,200,1
40 SOUND 1,-15,180,1
50 NEXT I
60 SOUND 1,-15,180,1
70 FOR I=1 TO 6
80 SOUND 1,-15,200,1
90 SOUND 1,-15,180,1
100 NEXT I
110 SOUND 1,0,0,30
120 UNTIL FALSE
```

CRASH

From Russell Thomas, Lytham, Lancs.

```
10 SOUND 0,1,100,100
```

FOOTSTEPS

From Mark and Ian Cossins, Maidstone, Kent

```
10 SOUND 1,-15,0,1
20 FOR A=1 TO 700:NEXT
30 SOUND 1,-15,2,1
40 FOR A=1 TO 700:NEXT
50 GOTO 10
```

CAR STARTING

From Mark and Ian Cossins, Maidstone, Kent

```
10 ENVELOPE 1,1,-20,10,-10,3,
   6,6,126,0,0,-126,126,126
20 SOUND 1,1,52,35
30 FOR A=0 TO 3000:NEXT
40 GOTO 20
```

WARSHIP SIREN

From David Loomens, Coney Hall, Kent

```
10 ENVELOPE 1,1,2,0,0,48,0,0,
   126,0,0,-126,126,126
20 SOUND 1,1,48,126
```

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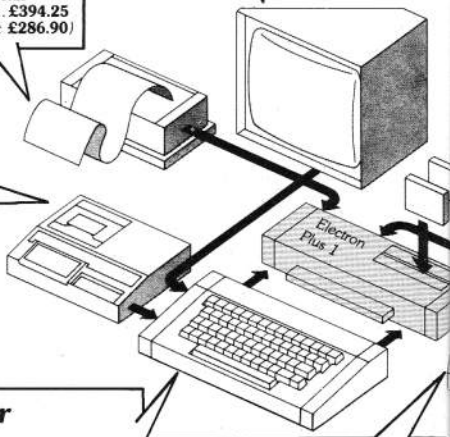

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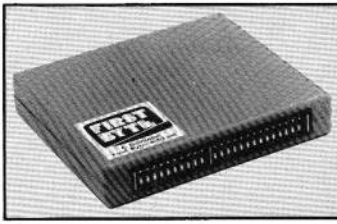

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PARACHUTE!

HAVE you ever wondered about the stories behind computer games? I mean, why are the aliens invading? And why is the gorilla so mad? What's it all about?

It's the same with **A.G. MARTIN's** game, Parachute. For reasons best known to themselves, a group of skydivers are hurling themselves out of a helicopter. Why?

Your job is to catch them on your raft before they perish in the water below.

The trouble is that your raft can only hold one person besides yourself, so every time you catch one you have to take him to one of the jetties to unload him.

You score points for every man you catch, but when you've missed five the game's over.

It's simple and it's fun to play. The instructions are in the game, now it's all up to you. Save the skydivers!

PROCEDURES

PROCboat	Moves the boat.
PROCjump	Selects a random dropping zone for the skydiver.
PROCcheck	Checks to see if a skydiver has been caught by the raft.
PROCscore	Gives the number of lives saved and lost.
PROCwaves	Animates the random waves.
PROCrun	Allows the skydiver to run off the raft when it reaches a jetty.

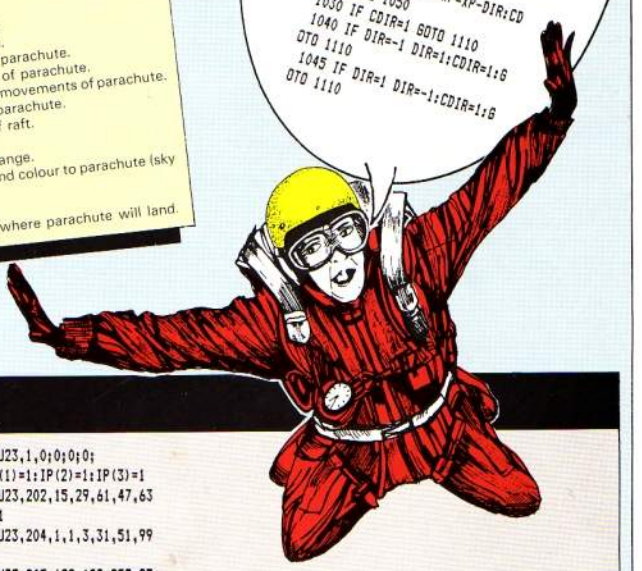
VARIABLES

W1$, W2$, W3$	Waves.
SW1$, SW2$, SW3$	Waves.
LI	Lives lost.
CO	Lives saved.
DIR, CDIR	Raft motion.
X, Y	Position of parachute.
XINC, YINC	Movement of parachute.
IP	Number of movements of parachute.
C	Colour of parachute.
XP, OXP	Position of raft.
mo	Mode.
C1, C2, C3	Colour change.
COL	Background colour to parachute (sky or sea).
JL$, JR$, L$	Jetties.
XF	Position where parachute will land.

WE receive quite a few requests for games which use only one key for control. These allow handicapped people who may not be able to use the normal keyboard layout to play the game.

The following lines will allow Parachute to be played using only the space bar to control the raft.

```
830 LI=0:CO=0:WC=4:DIR=1:CDIR=1
1020 IFINKEY(-99)XP=XP-DIR:CD
IR=0:GOTO 1050
1030 IF CDIR=1 GOTO 1110
1040 IF DIR=-1 DIR=1:CDIR=1:G
OTO 1110
1045 IF DIR=1 DIR=-1:CDIR=1:G
OTO 1110
```



Parachute listing

```
  10 REM PARACHUTE
  20 REM BY A.G.MARTIN
  30 REM (C) ELECTRON USER
  40 DIM IP(4),C(4),XF(4),XIN
C(4),YINC(4),X(4),Y(4),OX(4),O
Y(4)
  50 MODE6
  60 PRINTTAB(14,2)"Parachute
"
  70 PRINTTAB(14,3)"========
"
  80 PRINTTAB(14,6)"CONTROLS"
;TAB(13,7)"----------"
  90 PRINTTAB(14,9)"Z=LEFT";T
AB(14,11)"/=RIGHT"
 100 PRINTTAB(10,13)"YOU HAVE
 5 LIVES"
 110 INPUT TAB(14,18)"FAST/SL
OW",SPEED$
 120 IFSPEED$="FAST"#0=5:C1=1
:GOTO150
 130 IFSPEED$="SLOW"#0=2:C1=6
:GOTO150
 140 PRINTTAB(0,19)STRING$(11
," "):GOTO90
 150 MODE#0
 160 VDU23,1,0;0;0;0;
 170 IP(1)=1:IP(2)=1:IP(3)=1
 180 VDU23,202,15,29,61,47,63
,63,27,11
 190 VDU23,204,1,1,3,31,51,99
,67,195
 200 VDU23,205,128,128,255,25
5,254,12,8,8
 210 VDU23,206,255,127,63,31,
16,56,56,0
 220 VDU23,207,8,8,8,252,4,6,
6,0
 230 VDU23,208,48,48,240,240,
0,0,0,0
 240 VDU23,209,0,0,0,0,12,28,
60,60
 250 VDU23,210,0,0,0,0,0,240,
240,240
 260 VDU23,211,240,240,240,0,
0,0,0,0
 270 VDU23,212,0,0,0,0,0,0,25
5,255
 280 VDU23,213,0,0,0,0,60,36,36
,36,126
 290 VDU23,214,60,60,60,60,60
,60,60,60
 300 VDU23,215,0,0,0,0,0,24,24,
24,0
 310 VDU23,216,0,0,0,0,96,96,96
,0,0
 320 VDU23,218,0,0,0,0,126,255,
126,60,0
 330 VDU23,219,0,0,0,0,126,255,
126,60,0
 340 VDU23,220,31,31,63,63,12
7,127,255,255
 350 VDU23,221,20,129,0,129,0
,20,28,28
 360 VDU23,222,24,60,60,24,8,
24,56,56
 370 VDU23,223,32,57,79,207,2
52,252,104,40
 380 VDU23,224,0,0,0,0,0,0,0,
254
 390 VDU23,225,0,0,0,0,0,0,2,0,
0
 400 VDU23,226,0,0,0,0,48,0,0
,0
 410 VDU23,227,2,0,7,2,2,2,5,
0
 420 VDU23,228,255,255,255,25
5,255,255,255,255
 430 VDU23,229,20,85,65,8,0,0
,0,0
 440 VDU23,230,42,42,34,0,28,
8,20,20
 450 VDU23,231,255,255,254,25
4,252,252,248,248
 460 JL$=CHR$228+CHR$228+CHR$
228+CHR$228+CHR$228+CHR$231:JR
$=CHR$228
```

Parachute listing

From Page 25

```
  470 P$="  "+CHR$10+CHR$8+CHR
$8+"  "+CHR$230
  480 W1$=CHR$226:W2$=W1$+"  "+
W1$:W3$=W2$+"  "+W1$
  490 SW1$=CHR$225:SW2$=SW1$+"
 "+SW1$:SW3$=SW2$+"  "+SW1$
  500 GCOL0,2:VDU19,2,0;0;
  510 MOVE0,250:DRAW400,500:DR
AW400,575:DRAW0,575
  520 GCOL0,2:FOR I=254TO 574ST
EP4:PLOT77,0,I:NEXT
  530 MOVE1283,525:DRAW950,525
:DRAW950,560:DRAW1283,560
  540 FOR I=526TO558STEP4:PLOT7
7,1000,I:NEXT
  550 VDU19,4,0;0;
  560 GCOL0,4
  570 FOR I=0TO550STEP4:PLOT77,
600,I:NEXT
  580 GCOL0,C1
  590 VDU19,C1,0;0;
  600 FORJ=554 TO1100STEP4:PLO
T77,600,J:NEXT
  610 VDU19,2,2;0;:VDU19,4,4;0
;:VDU19,C1,6;0;
  620 GCOL0,0:MOVE0,575:DRAW0,
585:DRAW100,585:DRAW100,575:DR
AW100,585:DRAW200,585:DRAW200,
575:DRAW200,580:DRAW300,580:DR
AW300,575:DRAW300,580:DRAW390,
580:DRAW390,575
  630 IFmo=5 C2=2
  640 IFmo=2 C2=11
  650 GCOL0,C2:MOVE970,656:VDU
5 215
  660 GCOL0,7:MOVE970,656:VDU
213
  670 MOVE970,624:VDU 214
  680 MOVE970,592:VDU 214
  690 GCOL0,0:MOVE955,560:DRAW
955,565:DRAW1055,565:DRAW1055,
560:DRAW1055,565:DRAW1155,565:
DRAW1155,560:DRAW1155,565:DRAW
1255,565:DRAW1255,560:DRAW1255
,565:DRAW1283,565
  700 GCOL0,11:MOVE200,918:VDU
216
  710 GCOL0,0:MOVE200,950:VDU
209,210:MOVE264,918:VDU 211
  720 IFmo=5C3=3
  730 IFmo=2C3=9
  740 GCOL0,C3:MOVE200,982:VDU
212,212
  750 GCOL0,7:MOVE200,950:VDU
204,205,208:MOVE200,918:VDU 20
6,207
  760 MOVE700,800:VDU5 223
  770 GCOL0,C3:MOVE700,832:VDU
224
  780 VDU4:COLOUR132:COLOUR1:P
RINTTAB(10,25)CHR$220:COLOUR12
9:COLOUR7:PRINTTAB(11,25)CHR$2
27
  790 VDU23,200,16,16,16,16,0,0,0
,0,0
  800 L$=CHR$200+CHR$200+CHR$2
00+CHR$200+CHR$200+CHR$200
  810 COLOUR132:COLOUR1:PRINTT
AB(0,25)JL$;TAB(19,25)JR$;TAB(
0,26)L$;TAB(19,26)CHR$200
  820 XP=10:OXP=10:MAN=0
  830 LI=0:CO=0:WC=4
  840 VDU4:VDU23,1,0;0;0;0;:CO
LOUR2:PRINTTAB(0,30)"LIVES ";L
I;TAB(10,30)"SAVED ";CO
  850 PROCboat
  860 WN0=RND(2):IFWN0=1 PROCw
aves
  870 PROCjump(1)
  880 IFLI=5 PROCscore:GOTO830

  890 PROCboat
  900 PROCjump(2)
  910 IFLI=5 PROCscore:GOTO830

  920 PROCboat
  930 PROCjump(3)
  940 IFLI=5 PROCscore:GOTO830

  950 PROCboat
  960 PROCjump(4)
  970 IFLI=5 PROCscore:GOTO830
  980 GOTO850
  990 END
 1000 :
 1010 DEFPROCboat
 1020 IFINKEY(-98)XP=XP-1:GOTO
1050
 1030 IFINKEY(-105)XP=XP+1:GOT
O1050
 1040 GOTO1110
 1050 VDU4:COLOUR132:COLOUR4:P
RINTTAB(OXP,25)"  "
 1060 IFXP(6 XP=6
 1070 IFXP>17 XP=17
 1080 COLOUR132:COLOUR1:PRINTT
AB(XP,25)CHR$220:COLOUR129:COL
OUR7:PRINTTAB(XP+1,25)CHR$227
 1090 IFXP=6 PROCrun
 1100 IFXP=17 PROCrun
 1110 IF MAN>0 GCOL0,MAN:MOVEX
P*64,220:VDU5 227
 1120 OXP=XP
 1130 ENDPROC
 1140 :
 1150 DEFPROCjump(N)
 1160 COL=C1:IFIP(N)>16OTO1300
 1170 IFN=1 T1=2:T2=3:T3=4:GOT
O1210
 1180 IFN=2 T1=1:T2=3:T3=4:GOT
O1210
 1190 IFN=3 T1=1:T2=2:T3=4:GOT
O1210
 1200 T1=1:T2=2:T3=3
 1210 IFIP(T1)=3 GOTO1410
 1220 IFIP(T2)=3 GOTO1410
 1230 IFIP(T3)=3 GOTO1410
 1240 C(N)=RND(8):IFC(N)=N GOT
O1260
 1250 GOTO1410
 1260 IFC(N)=4 C(N)=5
 1270 IFC(N)=1 C(N)=7
 1280 IFmo=5 C(N)=3
 1290 XF(N)=RND(550)+600:XINC(
N)=(XF(N)-250)DIV22:YINC(N)=-3
2:MOVE250,900:GCOL0,C(N):VDU5
230:MOVE250,900:GCOL0,7:VDU5 2
29:X(N)=250:Y(N)=900:IP(N)=2:O
X(N)=X(N):OY(N)=Y(N):GOTO1300
 1300 IFOY(N)<=550 COL=4
 1310 MOVEOX(N),OY(N):GCOL0,CO
L:VDU5 228
 1320 X(N)=X(N)+XINC(N)
 1330 Y(N)=Y(N)+YINC(N)
 1340 PROCboat
 1350 SOUND1,1,-N*48,2
 1360 MOVEX(N),Y(N):GCOL0,7:VD
U5 229
 1370 MOVEX(N),Y(N):GCOL0,C(N)
:VDU 230
 1380 OX(N)=X(N):OY(N)=Y(N)
 1390 IP(N)=IP(N)+1
 1400 IFIP(N)=22 IP(N)=1:GCOLQ
,4:VDU8:VDU5 228:PROCcheck:GOT
O1410
 1410 ENDPROC
 1420 :
 1430 DEFPROCcheck
 1440 P=(X(N)+32)DIV64
 1450 IFP=XP CO=CO+1:GOTO1480
 1460 IFP=XP+1 CO=CO+1:GOTO148
0
 1470 GOTO1510
 1480 IFMAN>0 CO=CO-1:GOTO1510
 1490 MAN=C(N)
 1500 GOTO1560
 1510 LI=LI+1
 1520 FORKD=1TO100:NEXT
 1530 MOVEX(N),Y(N):GCOL0,7:VD
U5 221:SOUND0,1,14,10
 1540 FORKD=1TO200:NEXT
 1550 MOVEX(N),Y(N):GCOL0,4:VD
U 221
 1560 VDU4:COLOUR132:COLOUR2:P
RINTTAB(6,30);LI;TAB(16,30);CO
 1570 ENDPROC
 1580 :
 1590 DEFPROCscore
 1600 COLOUR7:COLOUR132
 1610 VDU23,1,0;0;0;0;
 1620 FORI%=0 TO 255 STEP4
 1630 SOUND&1,-12,I%,1
 1640 NEXT
 1650 PRINTTAB(0,30)"YOUR SCOR
E WAS ";CO
 1660 GCOL0,4
 1670 FORI=255TOOSTEP-4:SOUND&
1,-12,I,1:NEXT
 1680 FORKD=1TO2000:NEXT
 1690 COLOUR11:PRINTTAB(0,30)"
***GAME STARTING***"
 1700 FORI=0TO7:FORJ=0TO90STEP
2:SOUND&11,-I,J,5:NEXT:NEXT
 1710 FORKD=1TO2000:NEXT
 1720 PRINTTAB(0,30)SPC(19)
 1730 ENDPROC
 1740 :
 1750 DEFPROCwaves
 1760 IFWC=4 WC=7:CW=4:GOTO178
0
 1770 IFWC=7 WC=4:CW=7
 1780 VDU4:COLOUR132:COLOUR WC
 1790 PRINTTAB(2,28)W3$;TAB(3,
22)W2$;TAB(14,28)W3$;TAB(5,19)
W1$;
 1800 PRINTTAB(6,17)SW1$;TAB(1
4,17)SW1$
 1810 COLOURCW
 1820 PRINTTAB(16,20)W1$;TAB(2
,24)W3$;TAB(5,20)W2$;TAB(17,21
)W1$;TAB(17,24)W2$;
 1830 PRINTTAB(13,15)SW1$;TAB(
5,18)SW1$
 1840 ENDPROC
 1850 :
 1860 DEFPROCrun
 1870 IFMAN=0 GOTO1930
 1880 IFXP=17 COLOUR129:COLOUR
MAN:SOUND1,-15,250,1:PRINTTAB
(19,25)CHR$227:FORKD=1TO200:NE
XT:SOUND1,-15,250,1:PRINTTAB(1
9,25)SPC(1):GOTO1920
 1890 FORI=4TOOSTEP-1
 1900 COLOUR129:COLOUR MAN:PRI
NTTAB(I,25)CHR$227:FORKD=1TO75
:NEXT:SOUND1,-15,250,1:PRINTTA
B(I,25)SPC(1)
 1910 NEXT
 1920 MAN=0
 1930 ENDPROC
```

This listing is included in this month's cassette tape offer. See order form on Page 47.

Software Surgery

THE COLUMN THAT TAKES A LOOK INSIDE THE LATEST RELEASES

Just when you thought it was safe...

Bedbugs
Optima Software

TO quote from the game: "Just when you thought it was safe to go to sleep ..." Bedbugs, the new game from Optima Software, should safely disrupt your calmest dreams.

You begin with a bed alive with little nasties which are liable to nibble your feet at any time.

However you needn't despair, because you are armed with, believe it or not, a jam sandwich which you use to swat the bugs.

You also have a sponge to wipe up the sticky jam and a pair of false teeth that you can use to crunch the irritating fleas.

As a last resort there's a telephone that you can use to call Doctor Soothe or Pestdeath. These two will help you, always provided that they're in to answer the phone.

You choose your weapon from a "menu" on the left of the screen and chase the fleas across the bed. When you land on one you press Return and the little blighter is no more.

You mustn't, however, swat your feet (ouch!), fall off the bed or get yourself stuck in the jam, for heavy penalties are given.

The sound is reasonable, especially the familiar introduction tune, and the graphics are good although not striking.

The keys are sensibly placed and easy to use, avoiding the possibility of accidentally pressing Break.

All in all an original game for kiddies which will keep them occupied for hours.

Bev Friend

Simple, yet endless

Animator
Screenplay Software

I AM almost at a loss for words to describe this superb program from Screenplay, previously available for the BBC and the Dragon.

It is brilliantly simple in concept, yet the possibilities for its use are practically endless, being a program to create multicoloured sprites which can then be compiled into machine code for use in fast graphical action games.

The sprites may be saved to tape, and a library of them may be built up for future use.

The first program, Creator, allows the design of up to 63 separate sprites, each with two associated figures formed by 180 degree rotation about a horizontal or vertical axis.

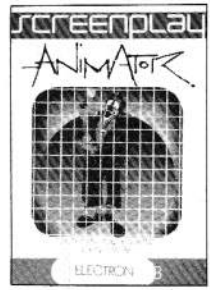
Larger sprites may be defined, up to 30 pixels square, but in this case only nine may be created.

They may have any colours, flashing or steady, and during the design stage the sprite is also shown life size for comparison.

Drawing the sprite is simplicity itself, as indeed is each feature of this program. When the sprite has been saved to tape it can still be recalled and minor alterations made for smooth animation.

The second main program, Compiler, allows previously saved sprites to be compiled into machine code for future use in either Basic or machine code programs.

Editing may still be performed at this stage, and the compiled code saved again onto tape. Extremely clear and detailed instructions on the subsequent CALL statements are given, as is an explanation of the built-in collision checking routine.



In addition to these excellent programs, there are also two demonstrations. One is a game called Dambuster, with modest but effective graphics, while the other is a marvellous scene in a tropical aquarium which I found myself staring at for a long time.

However I kept coming back again and again to the superb Creator program, creating endless multicoloured

→

STOP THE BEASTIES!

Centipede
Superior Software

ANOTHER entry into the insect world. A long, hungry caterpillar wends its way from the top of the screen to the bottom where you are located.

Can you stop the vicious little beastie or will it eat you alive? There are six skill levels to keep you on your toes.

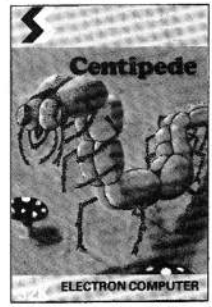
You dodge across the bottom of the screen using the Z and X keys to control movement, hitting the Delete key to blow the centipede to kingdom come.

While you're doing this you have to keep your eye open for the nasty spider that hangs around your end of the screen as he, too, will eat you if he can.

Also the poor, inoffensive little snail which wanders across the screen is worth a shot or two for, harmless though it is, it's worth 1,000 points. Collect 10,000 or 20,000 points and you get extra lives.

The sound and graphics are very good, the instructions clear and the choice of keys simple to use.

It's an amusing and entertaining game for those with fast fingers and a dislike of creepie-crawlies. **Peter Gray**



From Page 27

sprites simply because it was so easy and such tremendous fun.

This package is excellent value for money, being a very useful tool for the budding programmer. There is even a competition for an original program using sprites made with Animator, with a first prize of £200. I have the feeling that they will receive a lot of entries. **Phil Tayler**

Defuse those TNT bombs

Danger UXB
Program Power

ONE of the most original games I've come across so far, Danger UXB from Program Power, gripped my attention from the start and kept firm hold.

You are placed in the centre of a block of pathways consisting of blue squares, some of which bear a skull and crossbones.

The skulls mark the position of lethal TNT bombs. One after another their timers start, counting down from 60 to 0 when, unless you've defused them, they explode taking you with them.

Not only that but once you've used one set of squares to reach a bomb they disappear, so you can't go that way again.

You can, however, slide the row of blocks that you are on left and right but you have to be both fast and cunning.

If you manage to survive the first level you're "rewarded" with another screen where the countdown starts at 40.

Complete that and the next level has stamping boots that chase you round the grid. I don't understand that last part, but it's great fun.

With highly impressive graphics and sound, and easy to use keys the game appeals to all ages and is great fun for all the family. A highly original and compelling game.

Eileen Young

Friendly warning become

Electron Aid
Dynabyte Software

THIS super utility program actually contains a suite of two very helpful and easy-to-use facilities for the Electron. The loading program presents the user with the option to select Character or Soundlab.

The first allows the user to define up to 128 different characters (if PAGE is reset as appropriate), while the second encourages constructive use of sound ENVELOPES with various SOUND statements.

Neither, of course, allows the user to do anything that cannot be done anyway with help from the User Guide, but these utilities are extemely user-friendly.

On selecting Character the user replies to various screen prompts in order to select Mode (all available), and foreground and background colours.

Once this is settled the option to start from scratch, or whether to redefine an existing shape, is offered.

One way in which this may be of considerable use is

A disappointing statistic

Elementary Statistics
Garland Computing

THIS cassette of four programs and a single page of documentation comes from Garland's educational series, Learning Maths.

The package is aimed at children aged about 9-12 years and is for school or home use on either an Electron or BBC Micro.

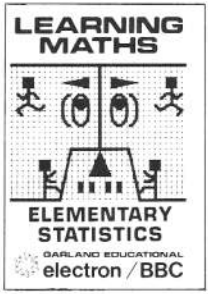
Garland has a good reputation for educational software for the BBC Micro but this package doesn't really live up to expectations, failing to make full use of the computer's facilities.

Furthermore its title is slightly misleading in that the programs are mainly concerned with data collection and display rather than the computation of statistical parameters.

After chaining the Index program, which displays Garland's logo, the user is asked to pick one of three programs, Barchart, Piechart or Scatter by typing CHAIN "Program name".

Unfortunately there is much room for operator error here and the loading sequence could be improved.

Barchart allows the user to label, input, add to and



compare up to 10 groups of data in the form of a frequency table or a barchart (not a histogram, as the documentation reminds us).

The data entry sequence may be upset by entry of large values, and is also drab as it doesn't utilise colour or sound. The barchart itself is in colour.

Negative numbers are also allowed on data entry, but are not properly displayed on the barchart.

Piechart is similar to the previous program and allows the user to enter and compare values for up to six groups of data.

The frequency table here also shows the angles (in degrees) used in the piechart. Again, the actual displayed chart is in colour.

In this program however, data cannot be altered or added.

Scatter plots the values of two groups of related data on a scattergram. First the axes are labelled and the maximum limits set, then each data item is plotted on the graph as the values are entered.

When all data has been entered – up to 100 values – the mean is automatically marked on the display. I liked this one with its instant plotting. It would be very easy to fiddle results and enter values which sat along a nice straight line.

Unfortunately this program does not allow for the correction or addition of data.

Overall the programs provide good value for money as a simple teaching aid but would be much more valuable for long term use in data collection and display if there were more facilities for error correction, saving of data and printout routines.

All the programs, however, are written entirely in Basic and can be used on either cassette or disc systems and could therefore be readily amended to suit individual users.

Mike Mahon

– you'll addicted

animation. A figure may be defined as one Ascii character and then copied to a second.

The second can then be edited to allow the slight changes necessary for smooth animation. Both versions of the shape thus remain available for recall.

Single key entry is provided, with the number keys controlling the various colours, editing and so on.

Key 8 will even list on screen the VDU23 lines, which can then be copied for future use.

A similar approach has been used in Soundlab, with a very fun approach to that bewildering world of envelopes.

There are preset ENVELOPES – up to seven can be programmed – and up to 15 sound commands may also be accessed.

They are easily tested, using single key again, or edited by use of the number keys and cursor control.

The sound controls are shown on screen in the format &FC,A,P,D while the ENVELOPE is shown, although not those numbers which are merely there for the infamous BBC compatibility.

Any ENVELOPE may be paired with any SOUND statement to gain an insight into the possibilities.

In addition the whole range of SOUND commands can be played one after the other, which in my case always sounded pretty ghastly.

Again, no more is gained than can be learned from the User Guide, but the program does all the work for you and shows you your current pieces on screen.

The listings of any good sounds produced may be obtained for future use.

I found this to be a fascinating program to work with, but I must warn you that it soon becomes almost as addictive as your favourite games.

Phil Tayler

File Handler
Dialsoft

Something missing...

THE cassette inlays from Dialsoft do not really attempt to sell the product, which is a pity as the cassette inside contains a fairly good filing system program.

Many people would wish to keep records of the card index type, whether for personal use (addresses, recipes etc), or for semi-personal applications (club membership, software records).

Your micro allows you to keep a file with these details, the data then being loaded into another database program, in this case File Handler.

The data can be manipulated to produce lists in alphabetical or numerical order, or to search for a particular entry.

The trouble with all tape-based database programs is speed – a large file takes some considerable time to load, whereas a disc system accesses data far more rapidly. Roll on disc drives for the Electron!

This isn't the best program I

have ever seen of its type, although there are areas in which it will stand comparison with others.

The speed of sorting is acceptable and the screen displays clear and legible. The program, however, lacks something in the area of user-friendliness, using jargon phrases like "file extent" without further explanation.

However one quickly gets used to these phrases, and it is then relatively easy to enter data or interrogate the file. The size of record which can be catered for varies with the number of fields. For instance, 200 records can be entered across four fields, while only 80 may be input if the number of fields is increased to 10.

It is also a simple matter to extend a file (if there is room) or to alter data, although the new data has to be saved to tape once again.

A sample file is included in the program, although I did not succeed in loading it.

I also found myself wondering why all serious programs have to be presented in black and white.

The program is listable, and it is relatively easy to alter screens to allow colour coding of the various pages.

Incidentally, the program is completely compatible with the BBC Micro.

Philip Tayler

A winner – as sure as eggs is eggs!

Chuckie Egg
A&F Software

REMEMBER the old arcade game where you had the unnerving task of leaping over seemingly endless gaps in your path, climbing ladders and being chased by ghoulies, ghosties and beasties as you progressed?

Were you addicted, as I was? If so, then Chuckie Egg, the new game from A&F Software, will be right up your street.

You control a cute little man with fast moving legs who starts at the bottom of the screen and has the task of collecting all the eggs.

This has to be done before the nasties get out and eat all the corn. And be warned, if you bump into a nasty you're a gonner.

It is also wise to keep an eye on the crazy duck in the cage at the top left. If she gets out you've had your chips – with or without eggs.

It's not easy, but you do have a stock of lives to get through before your little man is annihilated.

Once one level is cleared of eggs you progress higher, progressively harder with lifts and landing stages adding to the action.

You've got to be quick thinking and have fast reactions to collect all your eggs.

The sound and graphics are excellent and the key allocation is particularly good. Although the program gives you one set of keys you can choose your own, a feature more software houses should follow.

It's a great game, compelling and entertaining and should appeal to all ages. A winner.

Trevor Roberts

Here's a quick and easy way to get things moving on your display screen

JUST SCROLLING ALONG

SCROLLER, by ADAM WORTLEY, is a utility program that produces a banner display moving along the bottom of the screen.

You simply put any message you want into the program and the Electron will display it.

To change the message just copy line 40 and replace the string inside the inverted commas with your own. Keep it the same length as Adam's, or fill yours out with spaces. It's as easy as that.

As you'll see, the message scrolls from right to left.

Can you make it go from left to right? And how about one that goes from top to bottom? Or from corner to corner?

Scroller isn't just a useful screen utility, it's a challenge to your own programming skills.

```
10 REM Side Scroller
20 REM by Adam Wortley
30 REM (C) ELECTRON USER
40 MODE 1
   :VDU 23,1,0;0;0;0;
   :PROCSCROLL(3,15,"Sidew
   ays Scroller by Adam
    Wortley**",2,150
   ,25)
50 END
60 DEF PROCSCROLL(X,Y
   ,A$,C,P,N)
70 LET B$=A$+A$
80 COLOUR C
90 FOR H=1 TO N
100 FOR S=1 TO LEN A$
110 LET R=RND(13)+1
   :IF R=8
   THEN GOTO 110
120 VDU 19,C,R,0,0,0
130 FOR A=1 TO 200-P
   :NEXT
140 PRINT TAB(X,Y);
   MID$(B$,S,LEN A$)
150 NEXT S
160 NEXT H
170 ENDPROC
```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HOUSE OF HORRORS **(B)(E)** £6.95

Turn off the lights and gather around for the most creepy game of the year. How you laughed at those superstitious fools in the village when they warned you not to go near the old house. The climb up the rocky path under the afternoon sun was swift and within an hour you had passed through the outer gates of this once great house. The dust and cobwebs hadn't bothered you as you climbed the old stairs to the towers on the top level. Did you notice how low the sun had fallen before the sounds of locks clicking reached your startled ears? How can the moon be out already and what's that moving towards you??? This all action game will have you ducking and diving from the GHOSTS and ZOMBIES, and matching wits with a MUMMY, WEREWOLF, and VAMPIRE. 5 floors full of odd CORRIDORS, BROKEN FLOORBOARDS, and riddled with SECRET PASSAGES await you. Superb sound effects and graphics. Can be played using either keyboard or joysticks. Top table. Pause option.

EARLY YEARS (B)(E) For children between 3-6 years of age. These two packages give an adult or older child a means to take a younger child through a series of simple game type tasks to enforce ideas. The emphasis is on learning through fun. Topics covered include subtraction, addition, recognition, colour, shapes, sizes, sounds/notes, co-ordination, distances, estimates, directions.

EARLY YEARS 1
A) MICKEY THE MONKEY and his apple tree make subtraction fun.
B) COLOUR BLOCKS bring sizes and colour into perspective.
C) MERRY MUSIC turns the keyboard into a musical keyboard.
D) FUNNY FACES presents a line up, which one is the suspect?
E) FRED THE FROG needs co-ordinated help to get across the pond.

EARLY YEARS 2
A) THE POND seems very active today
B) SPEED is required to keep the cake on the conveyor belt.
C) DIRECTIONS seem to be needed by everyone in Orion village.
D) ORDER the blocks.
E) SID THE SPIDER needs some help to get out of the maze.

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Printout power at last!

NIGEL PETERS welcomes the arrival of a print port for the Electron

ONE of the niggling things about working for *Electron User* is, that until now, we've had to produce our program listings on a – dare I say it – BBC Micro. This was because the Electron had no way to use a printer.

Now, however, with the new Print Port from Signpoint, things have changed.

The Print Port is a small, flat, rectangular black box which looks very similar to the Joyport reviewed in the June issue.

It attaches to the expansion port at the back of the Electron and takes its power from it.

The Port connects to the printer by way of some three and a half feet of grey ribbon cable. Full marks to Signpoint for not stinting on the cable as some firms do.

The Electron operating system, although very similar to the BBC Micro's, wasn't designed for use with a printer.

Because of this, special software has to be loaded into the Electron from a tape cassette. It is this software that activates the Print Port and allows it to use a printer.

At first I thought that loading the software would be tedious, but I soon learnt differently. All you do is enter CH."" and the program loads itself in under half a minute.

A *FX call then activates the software and the Print Port is ready for action.

The software sits below Basic storage out of the way of the programs you type in. It stays here even if the Break key is pressed.

In the rare event that one of the programs you run should try to use the same memory space as the Print Port software Signpoint give four versions of it.

These are exactly the same program, they just sit in different places in the memory. It's very unlikely that all four won't work!

Once the Print Port is set up it is up to you to decide how to use it. If you want to print out everything that appears on the screen, then you just use the Ctrl+B and Ctrl+C key combinations familiar to users of the BBC Micro.

To get a hard copy listing you just select the printer using Ctrl+B, and type LIST as normal. The listing will appear both on the screen and on the printer.

Ctrl+C stops the screen output going to the printer. (It's amazing how much easier it is to debug a program from a listing rather than from the screen.)

Using Print Port is easy, and very well explained in the three explanatory sheets that come with it. However you don't always want everything that appears on screen to be printed out on hard copy.

The Print Port allows the use of the VDU2 and VDU3 commands to switch the printer on and off from inside programs. This allows you to choose what you want printed out from a program and when. Program I shows how it is done, with Figure I showing what the output is.

Incidentally, both these were printed out from an Electron using the Print Port. Who needs a BBC Micro now!

The Port works with any printer that conforms to the Centronics parallel interface standard such as the Epson or Brother printers. It also allows the Electron to pass control codes to the printer.

These control codes are numbers that affect the way that the printer works, for example producing italic or bold type or double spacing the lines.

Codes vary from printer to printer, and are given in the manuals. But beware! Not every printer manual is as clearly written as the explanatory sheets that come with the Print Port.

I was very impressed with the device. Quick and simple to use and well explained, it adds a whole new dimension to the Electron, giving me all the facilities that previously were only available on the BBC Micro.

I can't think of a higher recommendation.

Program I

```
10 VDU2
20 PRINT "This is an example program"
30 PRINT "using the Signpoint Electron"
40 PRINT"centronics print port"
50 VDU3
```

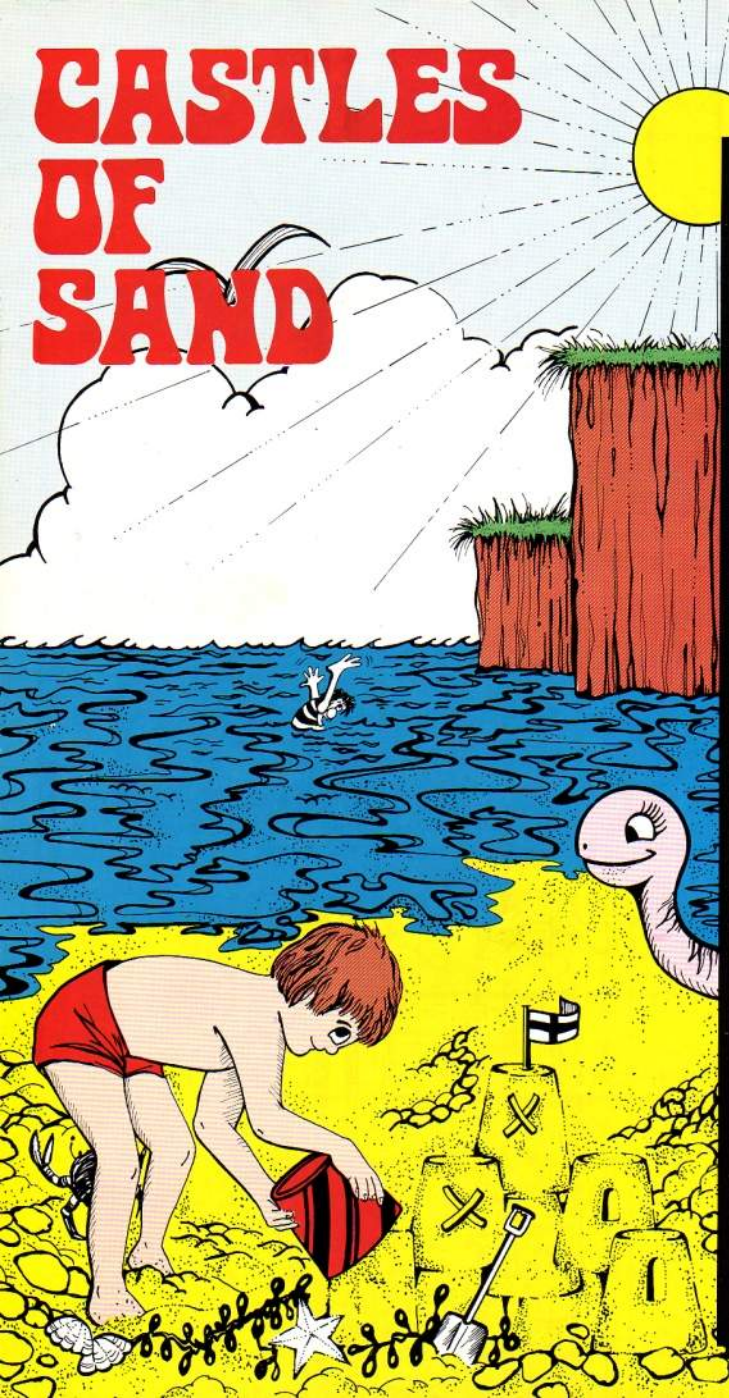
Figure I

```
This is an example program
using the Signpoint Electron
centronics print port
```

Example of the various type styles available

```
THIS IS ENLARGED
THIS IS CONDENSED
THIS IS ITALIC PRINTING.
THIS IS BOLD PRINTING.
```

CASTLES OF SAND



CASTLES of Sand is an orginal game where you don't have to leave your home to experience the frustration of building a sandcastle only to have it washed away by the sea!

The game begins with attractive titles displayed followed by instructions and the level of play option – level 3 being the hardest.

The screen is then drawn with your empty sandcastle – red with blue crosses – in the centre. There are piles of yellow sand on either side which you must collect and use to fill in your sandcastle.

When you have done this, suitable congratulations are issued and a harder beach displayed.

The sand at the top of the screen acts as a barrier to the sea which is slowly advancing to drown you. Beware any gaps in this barrier – fill them in quick or the sea will come rushing through.

The sea cannot harm your castle or kill you by reaching the bottom of the screen – it only drowns you if you are foolish enough to go for a paddle!

Any sand touched by the sea – except that in the castle – will slowly be eaten away so if you are not quick enough you may need extra sand from the barrier to complete your castle.

If so, beware the hungry sandworm.It will eat any sand you may be carrying if it catches you or any left in its path. Once lost, it cannot be recovered.

At the bottom of the screen your SCORE (25 points for each block of the castle filled in), BONUS (slowly declining) and BEACH (screen you are currently playing) are displayed. With each new BEACH the sea eats the sand away quicker and the barrier is smaller.

When you are eventually killed, either by drowning or loss of bonus, a hi-score table is displayed. Enter your name then press Return.

If you wish to save the names and scores for another day, press Ctrl Space and you will be given a load/save option.

MARTIN HOLLIS

PROCEDURES

PROCiinit	Sets up variables for beginning of program.
PROCinit	Sets up variables for beginning of game.
PROCtitles	Displays opening titles.
PROCinstr	Displays instructions.
PROCc	Switches cursor off.
PROCend	Called when an error is met.
PROCtext & PROCnum (N%,X,Y)	Prints BONUS, BEACH, SCORE characters and numbers at bottom of screen.
PROCmove	Tests for keys pressed and calls appropriate PROC.
PROCleft/PROCright/ PROCup/PROCdown	Call PROCdraw to move man.
PROCdraw(D% ,DY%)	Moves man in X,Y direction.
PROCdeadcheck	Checks to see if you are dead.
PROCscores	Displays hi-score table.
PROCsave	Gives option to save hi-score table.
PROCdig/PROCfill	To dig or drop sand.
PROCrestore	Restores all necessary values when castle filled in.

DIMs

P%(19,26)	Stores what is at that position on screen.
W%(19)	Remembers Y coordinates of nth wave.
H%(10),H$(10)	Remembers hi-score and hi-score names.

NUMERIC VARIABLES

A%,B%,C%,N%,Z%	General loop counters.
CR%	True if you are carrying sand.
H%	Level of difficulty.
S%	Score.
WP%	Wave now being moved.
X%,Y%	Coordinates of man.
BONUS%	Amount of time left.
DEAD%	True if you are dead.
FAST%	True if game in fast mode.
LEVEL%	Which beach is being played.
LOOP%	General loop counter.
SAND%	How many blocks to fill in on sandcastle.
WX%,WY%	Coordinates of worm.

STRING VARIABLES

A$,B$,F$,G$, L$,N$,S$,T$	These have general uses.
LE$,RI$,UP$,DO$	Left, right, up, down. (You may change the initial values of these which are set at lines 410-440.)
TT$	The keys which the computer checks while game is in progress (except Space and Shift which are controlled by INKEY (-n)).
W$	Sandworm.

Castles of Sand listing

```
  10REM * CASTLES OF SAND *
  20REM * BY MARTIN HOLLIS
*
  30REM * (C) ELECTRON USER
*
  40ONERROR MODE6:PROCc:PRO
Cend
  50*OPT1,1
  60*OPT2,1
  70*OPT3,6
  80MODE4
  90PROCc
 100VDU19,1,4,0,0,0
 110VDU23,224,1,1,129,195,2
55,255,126,60
 120PROCtitles
 130MODE6
 140PROCc
 150PROCinstr
 160RESTORE1460
 170ENVELOPE1,8,0,0,0,16,11
,50,8,-4,0,0,126,40
 180VDU23,225,56,120,240,24
0,192,0,0,0
 190VDU23,226,4,6,15,31,15,
7,2,0
 200VDU23,227,0,0,0,16,48,2
48,124,60
 210VDU23,228,0,112,112,32,
248,32,80,136
 220VDU23,229,0,112,114,37,
255,39,82,136
 230VDU23,230,0,24,36,36,36
,36,24,0
 240VDU23,231,0,16,48,16,16
,16,56,0
 250VDU23,232,0,60,4,4,60,3
2,60,0
 260VDU23,233,0,60,4,28,4,4
,60,0
 270VDU23,234,0,36,36,60,4,
4,4,0
 280VDU23,235,0,60,32,60,4,
4,60,0
 290VDU23,236,0,60,32,60,36
,36,60,0
```

Turn to Page 53

Make light work of listings

To save your fingers most of the listings in *Electron User* have been put on tape. Eight are now available – for the February, March, April, May, June, July and August issues, plus a bumper tape of all the programs from the introductory issues.

On the August tape:

SANDCASTLE The Electron seaside outing. **KNOCKOUT** Bouncing balls batter brick walls. **PARACHUTE** Keep the skydivers dry. **LETTERS** Large letters for your screen. **SUPER-SPELL** Test your spelling. **ON YOUR BIKE** Pedal power comes to your Electron. **SCROLLER** Sliced strings slide sideways. **FAST ELLIPSE** Speedy graphics. **NOTEBOOK** Lines and patterns explained.

On the July tape:

GOLF A day on the links with your Electron. **SOLITAIRE** The classic solo logic game. **TALL LETTERS** Large characters made simple. **BANK ACCOUNT** Keep track of your money. **CHARTIST** 3D graphs. **FORMULAE** Areas, volumes and angles. **NOTEBOOK** Time table.

On the June tape:

MONEY MAZE Avoid the ghosts to get the cash. **CODE BREAKER** A mastermind is needed to crack the code. **ALIEN** See little green men – the Electron way! **SETUP** Colour commands without tears. **CRYSTALS** Beautiful graphics. **LASER SHOOT OUT** An intergalactic shooting gallery. **SMILER** Have a nice day!

On the May tape:

RALLY DRIVER High speed car control. **SPACE PODS** More aliens to annihilate. **CODER** Secret messages made simple. **FRUIT MACHINE** Spin the wheels to win. **CHASER** Avoid your opponent to survive. **TIC-TAC-TOE** Electron noughts and crosses. **ELECTRON DRAUGHTSMAN** Create and save Electron masterpieces. **SHEEP** A program for insomniacs. **MATHS HIKE** Mental arithmetic. **MESSAGE** VDU commands in action.

On the April tape:

SPACEHIKE A hopping arcade classic. **FRIEZE** Electron wallpaper. **PELICAN** Cross roads safely. **CHESSTIMER** Clock your moves. **ASTEROID** Space is a minefield. **LIMERICK** Automatic rhymes. **ROMAN** Numbers in the ancient way. **BUNNYBLITZ** The Easter program. **DOGDUCK** The classic logic game.

On the March tape:

CHICKEN Let dangerous drivers test your nerve. **COFFEE** A tantalising word game from Down Under. **PARKY'S PERIL** Parky's lost in an invisible maze. **REACTION TIMER** How fast are you ? **BRAINTEASER** A puzzling program. **COUNTER** Mental arithmetic can be fun! **PAPER, SCISSORS, STONE** Out-guess your Electron. **CHARACTER GENERATOR** Create shapes with this utility. **FUNNY POLYGONS** Fast graphics going round in circles.

On the February tape:

NUMBER BALANCE Test your powers of mental arithmetic. **CALCULATOR** Make your Electron a calculator. **DOILIES** Multi-coloured patterns galore. **TOWERS OF HANOI** The age old puzzle. **LUNAR LANDER** Test your skill as an astronaut. **POSITRON INVADERS** A version of the old arcade favourite. **MOON RESCUE** Avoid the asteroids and save the spacemen.

On the introductory tape:

ANAGRAM Sort out the jumbled letters. **DOODLE** Multicoloured graphics. **EUROMAP** Test your geography. **KALEIDOSCOPE** Electron graphics run riot. **CAPITALS** New upper case letters. **ROCKET, WHEEL, CANDLE** Three fireworks programs. **BOMBER** Drop the bombs before you crash. **DUCK** Simple animation. **METEORS** Collisions in space. **COMBINATIONS** Crack the code. **BUZZ WORD GENERATOR** Let the Electron help you impress.

HOW TO ORDER

Please send me the following *Electron User* cassette tapes:

Fourteen programs from the August issue ..... £
Ten programs from the July issue ..... £
Ten programs from the June issue ..... £
Twelve programs from the May issue ..... £
Eleven programs from the April issue ..... £
Twelve programs from the March issue ..... £
Nine programs from the February issue ..... £
26 programs from the introductory issues ..... £ _____

I enclose the sum of £ _____

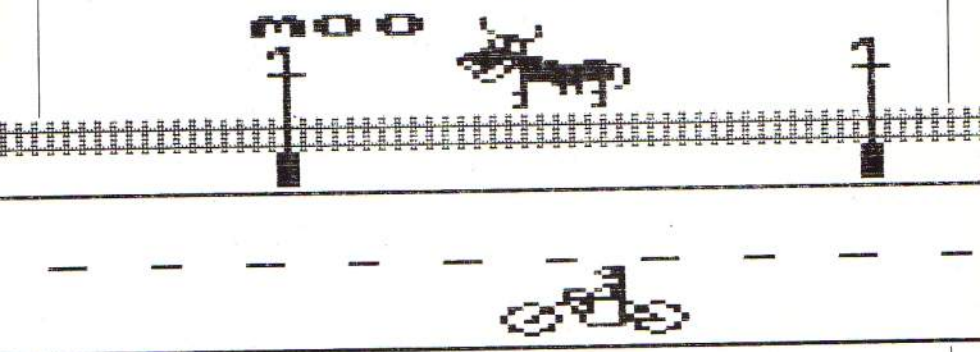
Name .....
Address .....
.....

POST TO: Tape Offer, Electron User, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

ON YOUR BIKE!

PEDAL power comes to the Electron with DAVID McLACHAN's clever and amusing graphics program, On Your Bike.

It is a well structured, easy-to-follow program that's an excellent example of Electron animation.



VARIABLES

L%	Road markings.
X%	Bike's horizontal axis.
Y%	Bike's vertical axis.
AA%	House horizontal axis.
BB%	House vertical axis.
XX%	Leg positions.
QQ%	Screen count.
OLDX%	Old position of bike.
OLDXX%	Old position of leg.

PROCEDURES

230 PROCINIT	Sets up all variables.
820 PROCSCREEN1	Draws the road.
1410 PROCCOW	Draws the cow.
1540 PROCWALL	Draws the wall.
970 PROCTRUCK	Draws the truck.
1190 PROCFENCE	Draws the fence.
1280 PROCHOUSE	Draws the house.
910 PROCLAMPPOST	Draws the lamp posts.
660 PROCMOVEBIKE	Moves the bike.

```
 10 REM ON YOUR BIKE
 20 REM By David McLachlan
 30 REM (c) Electron User
 40 MODE 2
 50 PROCCHARACTERS
 60 PROCINIT
 70 PROCSCREEN1
    :PROCWALL
    :PROCLAMPPOST
 80 REM *** MAIN LOOP
     ***
 90 REPEAT
100 GCOL 0,3
110 QQ%=QQ%+1
120 IF QQ%=2
    THEN XX=1200
    :PROCSCREEN1
    :PROCWALL
    :PROCLAMPPOST
    :PROCTRUCK
130 IF QQ%=3
    THEN XX=1200
    :PROCWALL
    :PROCTRUCK
    :PROCSCREEN1
    :PROCFENCE
    :PROCCOW
    :PROCLAMPPOST
140 IF QQ%=4
    THEN PROCCOW
    :PROCSCREEN1
    :PROCFENCE
    :PROCHOUSE
    :GCOL 0,3
    :PROCLAMPPOST
150 IF QQ%=5
    THEN XX=1200
    :PROCFENCE
    :PROCSCREEN1
    :PROCWALL
    :PROCLAMPPOST
    :PROCTRUCK
    :PROCCOW
    :PROCHOUSE
160 IF QQ%=6
    THEN GOTO 60
170 XX=1100
180 REPEAT
190 PROCMOVEBIKE
200 UNTIL XX<=100
210 UNTIL FALSE
220 REM **SETUP VARIABLES
     ****
230 DEF PROCINIT
240 CLS
250 ENVELOPE 1,1,-2,-2
    ,0,9,9,0,126,0,0,-126
    ,126,126
260 XX%=233
    :QQ%=0
    :XX=1100
    :YX=440
270 OLDXX=XX
    :OLDYX=YX
280 OLDXXX=XXX
290 VDU 5
    :GCOL 3,7
    :MOVE XX,YX
    :VDU 225,8,8,10,226
    ,XXX,227
300 VDU 5
310 ENDPROC
320 REM **** CALL CHARACTER
    S ****
330 DEF PROCCHARACTERS
340 VDU 23,225,7,11,7
```

This listing is included in this month's cassette tape offer. See order form on Page 47.

On your Bike listing

From Page 35

```
    ,1,7,235,147,255
    :REM **HEAD**
350 VDU 23,226,25,102
    ,70,137,153,66,102
    ,24
    :REM **FRONT WHEEL**
360 VDU 23,227,152,102
    ,98,145,249,66,102
    ,24
    :REM **BACK WHEEL**
370 VDU 23,228,141,77
    ,77,37,37,31,4,12
380 VDU 23,229,141,93
    ,89,49,33,63,96,0
390 VDU 23,230,141,89
    ,113,33,97,223,0,0
400 VDU 23,231,177,113
    ,65,225,33,31,0,0
410 VDU 23,232,177,81
    ,113,33,33,31,0,0
420 VDU 23,233,153,77
    ,69,45,33,31,0,0
430 REM **** LAMP_POST
    ****
440 VDU 23,234,24,56,40
    ,8,8,8,62,8
450 VDU 23,235,8,8,8,8
    ,8,8,8,8
460 VDU 23,236,28,28,28
    ,28,28,28,28,28
470 REM **** FENCE ****
480 VDU 23,237,170,170
    ,255,170,170,170,255
    ,170
490 REM **** TRUCK ****
500 VDU 23,238,0,120,68
    ,68,68,68,124,254
510 VDU 23,239,254,255
    ,255,255,245,247,20
    ,8
520 REM **** COW ****
530 VDU 23,240,0,0,0,4
    ,4,4,2,1
540 VDU 23,241,0,0,0,0
    ,0,8,8,200
550 VDU 23,242,2,2,7,31
    ,63,47,22,12
560 VDU 23,243,240,160
    ,160,224,248,126,255
    ,191
570 VDU 23,244,0,0,0,0
    ,0,56,254,253
580 VDU 23,245,9,6,0,0
    ,0,0,0,0
590 VDU 23,246,63,63,35
    ,33,97,32,32,96
600 VDU 23,247,253,253
    ,201,74,88,8,8,24
610 REM **** WALL ****
620 VDU 23,248,255,8,8
    ,8,255,64,64,64
630 VDU 23,249,0,247,247
    ,247,0,191,191,191
640 ENDPROC
650 REM **** MOVEMENT
    OF BIKE ****
660 DEF PROCMOVEBIKE
670 IF INKEY (-1)
    THEN X%=X%-32
    :GOTO 690
680 X%=X%-16
690 XX%=XX%-1
700 IF XX%=228
    THEN XX%=233
    :SOUND 1,1,0,8
710 IF (X%=OLDX%)ENDPROC
720 VDU 5
    :GCOL 3,7
730 MOVE OLDX%,OLDY%
    :VDU 225,8,8,10,226
    ,OLDXX%,227
740 MOVE X%,Y%
750 *FX19
760 VDU 225,8,8,10,226
    ,XX%,227
770 VDU 8,8,9
780 OLDX%=X%
790 OLDXX%=XX%
800 ENDPROC
810 REM **** DRAW ROAD
    ****
820 DEF PROCSCREEN1
830 GCOL 0,3
840 MOVE 0,534
    :DRAW 1280,534
850 MOVE 0,370
    :DRAW 1280,370
860 FOR L%=1 TO 1280
    STEP 100

870 MOVE L%,450
    :DRAW L%+30,450
880 NEXT
890 ENDPROC
900 REM **** DRAW LAMPPOSTS
    ****
910 DEF PROCLAMPPOST
920 GCOL 0,7
930 MOVE 304,570
    :VDU 236,8,11,235
    ,8,11,235,8,11,234
940 MOVE 900,570
    :VDU 236,8,11,235
    ,8,11,235,8,11,234
950 ENDPROC
960 REM **** DRAW TRUCK
    ****
970 DEF PROCTRUCK
980 GCOL 0,6
990 IF QQ%=3
    THEN GCOL 0,0
1000 MOVE 400,550
1010 VDU 238,8,10,239
1020 GCOL 0,4
1030 IF QQ%=3
    THEN GCOL 0,0
1040 MOVE 250,500
    :MOVE 250,600
    :PLOT 85,390,600
1050 MOVE 250,500
    :MOVE 390,600
    :PLOT 85,390,500
1060 GCOL 0,6
1070 IF QQ%=3
    THEN GCOL 0,0
1080 MOVE 260,498
1090 DRAW 260,494
1100 DRAW 264,490
1110 DRAW 278,494
1120 DRAW 278,498
1130 IF QQ%=3
    THEN GCOL 0,0
1140 VDU 5
1150 MOVE 260,560
1160 PRINT "EU"
1170 ENDPROC
1180 REM **** DRAW FENCE
    ****
1190 DEF PROCFENCE
1200 GCOL 0,2
1210 IF QQ%=5
    THEN GCOL 0,0
1220 MOVE 0,600
1230 FOR FENCE%=1 TO 20
1240 VDU 237
1250 NEXT
1260 ENDPROC

1270 REM **** DRAW HOUSE
    ****
1280 DEF PROCHOUSE
1290 GCOL 0,1
1300 MOVE 500,610
1310 FOR HOX=0TO 28
1320 READ AA%,BB%
1330 DRAW AA%+200,BB%+10
1340 DATA 340,600,380,620
    ,380,680,360,700,320
    ,680,340,660,300,660
    ,300,600,340,600,340
    ,660,380,680,340,660
    ,320,680,300,660,300
    ,780,400,880,600,880
    ,540,780,300,780,540
    ,780,600,880,660,840
    ,540,780,660,840
1350 DATA 660,680,540,610
    ,540,780,540,610,380
    ,620
1360 NEXT
1370 RESTORE
1380 MOVE 640,700
    :DRAW 700,700
    :DRAW 700,640
    :DRAW 640,640
    :DRAW 640,700
1390 ENDPROC
1400 REM **** DRAW COW
    ****
1410 DEF PROCCOW
1420 GCOL 0,7
1430 IF QQ%=4
    THEN GCOL 0,0
1440 MOVE 500,700
1450 IF QQ%=5
    THEN MOVE 100,730
1460 VDU 240,241,8,8,10
    ,242,243,244,8,8,8
    ,10,245,246,247
1470 MOVE 300,700
1480 IF QQ%=5
    THEN MOVE 100,770
1490 VDU 5
1500 IF QQ%=4
    THEN GCOL 0,0
1510 PRINT "moo"
1520 ENDPROC
1530 REM **** DRAW WALL
    ****
1540 DEF PROCWALL
1550 GCOL 0,7
1560 IF QQ%=3
    THEN GCOL 0,0
1570 MOVE 0,600
1580 FOR WALL%=1 TO 20
1590 VDU 248
1600 NEXT
1610 VDU 11
1620 GCOL 0,1
1630 IF QQ%=3
    THEN GCOL 0,0
1640 FOR WALL%=1 TO 20
1650 VDU 249
1660 NEXT
1670 GCOL 0,7
1680 IF QQ%=3
    THEN GCOL 0,0
1690 MOVE 0,570
    :DRAW 1300,570
1700 ENDPROC
```

This listing is included in this month's cassette tape offer. See order form on Page 47.

BOOK SHELF

Friendly book that's just that

The Friendly Computer Book, Jonathan Inglis, BBC Publications.

IT MAY seem strange, but the book I'm about to review isn't about the Electron at all. It's written for three other micros.

However, when I tell you that one of these is the BBC Micro then you might see why we're reviewing it in *Electron User*.

Most of what it says about the BBC Micro applies equally well to the Electron so it would be a pity not to mention it. After all, why should BBC Micro users have all the best books?

When I first saw The Friendly Computer Book and read the blurb on the back, I was against it straight away.

I was convinced it would be one of those computer books which confuses being simple with being simplistic, and explaining in easily understood terms with talking down to people.

The fact that it had cartoons in it didn't help my prejudices, either.

Happily, though, when I actually got down to reading the book as opposed to reacting to it I got a very pleasant surprise.

I found that it really was the friendly and simple introduction to Basic programming that the blurb claimed it to be.

The book starts with a general introduction to the world of computing and explains some of the jargon used. Nowhere does it go into things too deeply, but what it has to say is thorough and makes sense.

It gives the answers to the sort of questions beginners have but feel too daft to ask.

It then goes on to cover keyboard skills and in the third chapter starts on programming proper.

The remaining ten chapters deal with Basic programming in simple, clear terms. New concepts are introduced gradually and logically and thoroughly explored in some delightful little programs.

The novice is painlessly lead through the early keywords (LIST, RUN and so on), loops, decision making, arrays and simple data handling onto simple sound, graphics and animation.

The presentation of the book is excellent. The listings are clear, the cartoons amusing and helpful, and "Chip's Workshop" at the end of each chapter adds a nice, friendly and educational touch to the main text.

Each chapter also carries a summary of what it contains.

The only reservation I have is that as it's written to cover three micros (the BBC, RML380Z and the Spectrum) the programs don't make all that much use of the more advanced structures of BBC Basic.

Still, in what is meant to be a very elementary beginner's book, I can't see that's any real fault.

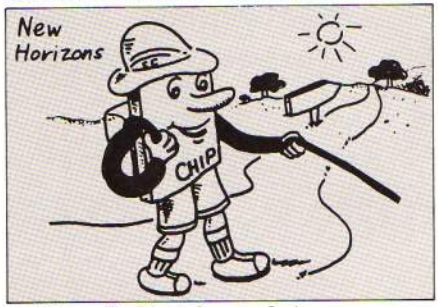
In fact considering it covers three micros, each with different commands, the book is amazingly easy to follow, a tribute to whoever designed it.

So, all in all, an excellent little book that I would unhesitatingly recommend to those who find the more traditional type of textbook too daunting.

It may be a little too simple for some tastes but it's certainly one to bear in mind when buying a beginner's book for the young (and the not so young).

It is a very friendly guide to the basics of Basic and a gentle introduction to micros for newcomers, even if they have an Electron and the book was written for a different machine.

Peter Green



Mr Chip from The Friendly Computer Book

Quantity – and quality too!

40 Educational Games for the Electron, Vince Apps, Granada Publishing.

FORTY programs for less than £6 has got to be good value by any standards, but the real value of this book depends largely on the quality of those games.

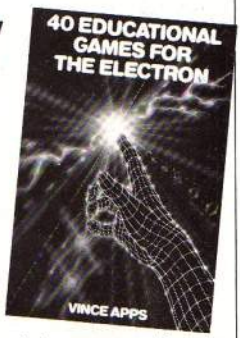
Here Vince Apps has written 40 assorted, simple programs, some of which could stand on their own.

The real purpose, I am sure, is to encourage young users to experiment with these basic modules, and so make them more suitable for their own particular needs.

In this respect the book is a winner as a few hints are given to develop each program, but not enough to overwhelm the inexperienced.

The book's range is wide, from geography to anagrams, from Morse code to chemical elements. There are several 'classic' games such as Simon and Mastermind, and a few novel ideas as well.

I would have liked to see a little more explanation of some



of the more unusual features (*FX calls for example), perhaps through greater use of REM statements.

The more experienced programmer can always leave them out, while the less experienced would not need to be constantly referring back to the manual.

I also found some of the screen illustrations rather misleading – the program itself turning out to be rather different – although most were fair likenesses.

To end on a more positive note, the programs are excellent examples for any aspiring beginner, being well structured and often modular in construction.

Many children will have great fun using them, and will be learning almost by accident while they do!

Phil Tayler

KNOCK OUT!

ARE there times when no one pays any attention to you and you feel like you are talking to a brick wall?

Well, cheer up, ROLAND WADDILOVE's program Knockout gives you the chance to get your own back!

Row after relentless row of brick walls creep up the screen. Your job is to stop any of them reaching the top.

You do this by sending a ball – which is merrily bouncing across the top of the screen – crashing into the marauding masonry.

It's easy to play as the space bar is the only control used throughout.

It's also great fun – a simple but thoroughly enjoyable game that will keep you at the keyboard for hours.

```
10REM KNOCKOUT
20REM By R.A.Waddilove
30
40MODE 1
50PROCinitialise
60PROCinstructions
70MODE 2
80REPEAT
90PROCdifficulty
100PROCset_variables
110REPEAT
120PROCmove_ball
130PROCdrop_ball
140PROCknockout_bricks
150PROCcheck_top_line
160PROCmove_wall
170UNTIL game_over
180PROClost
190PROCanother_game
200UNTIL INSTR("Nn",key$)
210PROCend
220MODE 6
230END
240
250DEF PROCinitialise
260VDU 23,224,127,127,127,127,12
7,127,127,127,0
270VDU 23,225,16,32,64,255,6
4,32,16,0
280VDU 23,226,8,4,2,255,2,4,
8,0
290VDU 23,227,24,126,255,255
,255,255,126,24
300ENVELOPE 1,2,4,-4,0,1,1,0
,126,0,0,-126,126,126
310ENVELOPE 2,129,-1,0,0,100
,0,0,126,0,0,-126,126,126
320*KEY10,"OLD|MRUN|M"
330*FX4,1
340*FX11,0
350*FX229,1
360brick$=STRING$(20,CHR$224)
370best%=0
380ENDPROC
390
400DEF PROCset_variables
410VDU 19,8,14;0;19,14,8;0;
420VDU 23,1,0;0;0;0;
430score%=0 : level%=3
440rows%=0 : type%=1
450game_over=FALSE
460FOR i%=1 TO 3
470PROCmove_wall
480NEXT
490ENDPROC
500
510DEF PROCmove_wall
520IF type%=1 THEN PROCbrick
s ELSE PROCspaces
530PRINT TAB(0,31);next$;
540COLOUR 7
550PRINT TAB(5,0);"SCORE=";s
core%'SPC(20);
560IF game_over ENDPROC
570PRINT CHR$226;TAB(19,2);C
HR$225
580ENDPROC
590
600DEF PROCbricks
610COLOUR level%-2
620IF rows%=level% THEN rows
%=0 : level%=level%+1 : type%=
-type% ELSE rows%=rows%+1
630next$=brick$
640ENDPROC
650
660DEF PROCspaces
670IF rows%=10 THEN rows%=0
: type%=-type% ELSE rows%=rows
%+1
680next$=STRING$(20," ")
690ENDPROC
700
710DEF PROCmove_ball
720x%=1 : y%=1 : direction%=1
730*FX15,1
740SOUND 1,-15,100,1
750REPEAT
760IF x%=0 OR x%=19 THEN dir
ection%=-direction% : SOUND 1,
-15,100,1
770newx%=x%+direction%
780VDU 31,x%,y%,32,31,newx%,
y%,227
790x%=newx%
800PROCpause(8)
810UNTIL INKEY0=32
820ENDPROC
830
840DEF PROCdrop_ball
850REPEAT
860VDU 31,x%,y%,32,31,x%,y%+
1,227
870SOUND &11,-10,140-y%*4,5
880y%=y%+1 : PROCpause(8)
890point%=POINT(x%*64+32,976
-32*y%)
900UNTIL y%=31 OR point%
910ENDPROC
920
930DEF PROCknockout_bricks
940IF y%=31 ENDPROC
950SOUND 0,-15,4,1
960PRINT TAB(x%,y%);" ";
970y%=y%+1
980FOR j%=1 TO RND(level%)+1
990FOR i%=x%-j% TO x%+j%
1000IF POINT(i%*64+32,1012-y%
*32)>0 AND y%>0 THEN score%=sc
ore%+9+speed% : PRINT TAB(11,0
);score%;TAB(i%,y%);" "; : SOU
ND 0,-15,4,2
1010NEXT
1020y%=y%-1
```

PROCEDURES

250 **PROCinitialise**	Defines characters, envelope and switches off cursor and repeat.
1720 **PROCinstructions**	Prints instructions.
1060 **PROCdifficulty**	Inputs speed of game.
400 **PROCset_variables**	Turns cursor off, sets level/score/rows/type.
710 **PROCmove_ball**	Moves ball back and forth along the top until the space bar is pressed.
840 **PROCdrop_ball**	Moves ball down the screen until brick hit or at bottom.
930 **PROCknockout_bricks**	Rubs out bricks hit, increments score.
1180 **PROCcheck_top_line**	Checks to see whether wall has reached the top.
510 **PROCmove_wall**	Prints either bricks or spaces along the bottom of the screen.
1250 **PROClost**	Makes appropriate sound, shows bricks at top.
1420 **PROCanother_game**	Shows high score, asks whether you want to play again.

VARIABLES

x%,y%	Ball coordinates.
score%	Score.
level%	Maximum number of rows of bricks.
rows%	How many rows printed at bottom.
type%	Row of spaces or bricks.
bricks$	Row of bricks.
best%	High score.
direction%	1 or −1, right or left.
speed%	Speed of game.
next$	Next row to be printed, either bricks or spaces.

```
1030NEXT
1040ENDPROC
1050
1060DEF PROCdifficulty
1070CLS : COLOUR 3
1080PRINT'''TAB(4);"What spe
ed ?"
1090COLOUR 1
1100PRINT'TAB(4);"(1,2 or 3)
";
1110SOUND 1,-10,50,10
1120REPEAT
1130speed%=GET-48
1140UNTIL speed%<4 AND speed%
>0
1150SOUND 1,-10,50,5 : CLS
1160ENDPROC
1170
1180DEF PROCcheck_top_line
1190y%=1012-3*32
1200FOR x%=32 TO 1248 STEP 64
1210IF POINT(x%,y%) game_over
=TRUE
1220NEXT
1230ENDPROC
1240
1250DEF PROClost
1260speed%=1 : COLOUR 8
1270SOUND 1,1,50,40
1280SOUND 1,2,100,40
1290FOR x%=0 TO 19
1300IF POINT(x%*64+32,1012-64
) THEN PRINT TAB(x%,2);CHR$224
: SOUND 1,-15,RND(100),10
1310NEXT
1320MOVE 0,948 : PLOT 21,1279
,948
1330PROCpause(500)
1340ENDPROC
1350
1360DEF PROCpause(delay%)
1370TIME=0 : delay%=delay% DI
V speed%
1380REPEAT
1390UNTIL TIME>delay%
1400ENDPROC
1410
1420DEF PROCanother_game
1430CLS : COLOUR 3
1440IF best%<score% PROChi_sc
ore
1450CLS : COLOUR 6
1460PRINT''''"Best score:";be
st%
1470PRINT''"By...";name$;
1480SOUND 1,-10,50,10
1490PROCpause(300)
1500COLOUR 1
1510PRINT''''"Do you want to
play"''"again (Y or N) ?";
1520SOUND 1,-10,50,10
1530REPEAT
1540key$=GET$
1550UNTIL INSTR("YyNn",key$)
1560VDU 7 : CLS
1570ENDPROC
1580
1590DEF PROChi_score
1600best%=score%
1610PRINT''''"This is the bes
t"''"score so far !"
1620COLOUR 5
1630PRINT''''"What is your na
me ?"
1640COLOUR 1
1650PRINT''"(up to 10 letters)
"
1660COLOUR 3 : VDU 23,1,1;0;0
;0;
1670REPEAT
1680INPUT TAB(0,20);SPC(40);T
AB(0,20);name$
1690UNTIL LEN name$<11 AND LE
N name$
1700ENDPROC
1710
1720DEF PROCinstructions
1730PRINT'TAB(14);"KNOCKOUT"'
TAB(13);"----------"
1740COLOUR 2
1750PRINT''"Try to stop the wa
ll advancing up the"''"screen
by knocking the bricks out wit
h"''"a canonball."
1760PRINT''"The canonball mov
es back and forth along"''"the
top of the screen until the sp
ace"''"bar is pressed. It then
drops down and"''"crashes int
o the wall."
1770PRINT''"There are three s
peeds, 1 is the slowest"''"and
each brick is worth 10 points.
One"''"bonus point is given o
n level 2, and two"''"bonus poi
nts are given on level 3."
1780COLOUR 1
1790 PRINT''''"  Press the sp
ace bar to start...";
1800SOUND 1,-10,50,10
1810REPEAT
1820UNTIL GET=32
1830CLS
1840ENDPROC
1850
1860DEF PROCend
1870*FX4,0
1880*FX12,0
1890*FX229,0
1900ENDPROC
```

This listing is included in this month's cassette tape offer. See order form on Page 47.

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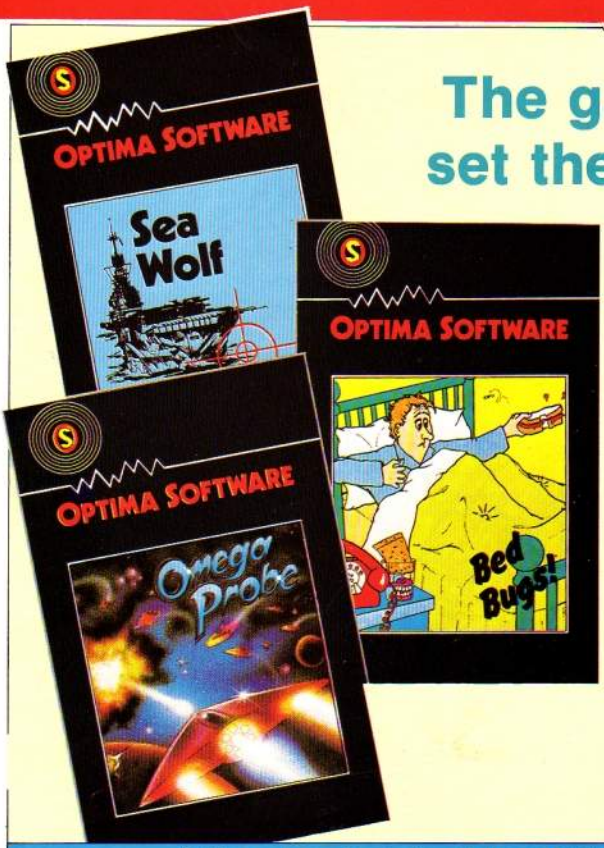

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And it couldn't be easier to enter. All you have to do is think up an idea for the Micro Kid cartoon strip and send it to us.

You don't even have to draw it, just tell us what's happening in each of the three frames. And even if you're not lucky enough to win, you might still see your idea in print.

Just use the contest entry form below to describe your Micro Kid strip.

Entries have to be received by August 31, 1984, and the judges decision will be final. The two most original and amusing cartoon strips will receive the Signpoint Print Ports.

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WE HAVE A WINNER

REMEMBER the May competition where we asked you to think up the links between that month's Casting Agency characters? The prize was a Signpoint Joyport joystick interface.

We had lots of very clever entries, and picking the winner wasn't easy. Finally we settled on this poem from Paula Hatcher of Bognor Regis.

The Joyport is on its way to her.

Fred the Dragon's happy watching his TV,
But the Devil's playing tricks as he's feeling crotchety.
The TV set goes wrong and Fred's voice begins to quaver,
So you'd better fetch a brolly (and maybe a lifesaver),
Because if Fred should start to cry,
You've no hope of staying dry!

ELECTRON USER contest entry form

Fill in each frame below (in words or pictures) with your idea for the Micro Kid cartoon strip. Then send your entry to:

Print Port, Electron User Contest, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

Name _____

Address _____

_____

_____

Frame 1	Frame 2	Frame 3

NIGEL PETERS scrutinises VDU23 statements

See how your characters shape

THE idea for Character Shaper came when I was helping the Editor sort out some of the Casting Agency characters sent in by our readers.

Some of the diagrams showing how they were made up were fairly small and had to be redrawn on a larger scale.

This took up quite a bit of time – especially since the Editor is no artist and seems to hate counting.

I decided that it would be far easier and more sensible if we got the Electron to do the work, so Character Shaper was created.

When you come across a VDU23 and you want to know how its grid is made up, you just run the program. It asks you to enter the numbers that define that character and the grid diagram then appears on the screen.

An asterisk means that that block is filled in, an apostrophe means that it's blank.

Alternatively you could say that the asterisks show the patches of foreground colour, the apostrophes the background.

Take the case of the Devil's Head in the May Casting Agency. The VDU23 statement is:

```
VDU 23,225,66,90,126,
    90,255,66,60,24
```

To see how the grid is made up we just run the program, enter the last eight numbers of the VDU23 and Figure I appears on the screen.

From this, it's easy to fill in the grid. Figure II shows what the completed grid looks like.

So how does it work?

If you've ever thought about it, you may have wondered how just eight numbers after a VDU23 manage to define a character of eight rows, each row of which has eight blocks.

How does 255 produce a row of all foreground colours, and 0 produce all background as in Figure III?

And how does the Electron know that the number 3 means that only the last two blocks in the row are to be switched on?

The answer is that the Electron converts the number into an eight figure binary number.

This isn't as mathematical as it might sound. The binary number is just the same value as the normal number but it's made up of only 0s and 1s. In the binary system 255 is 11111111 while 3 is 00000011.

If you look back at Figure III you might notice that each of the eight blocks making up the row correspond to the binary number for that row.

The 1s in the binary number are in foreground colour, the 0s are in background colour.

The Electron translates the decimal number 3 into an eight figure binary number 00000011. It uses the pattern of that binary number to decide which parts of the row are in foreground colour.

Figure IV shows this for the Devil's Head. Notice that the 1s of the binary number correspond to the blocks that are filled in.

Now let's have a look at Character Shaper which uses this principle to show how a user-defined character is made up.

The first three lines are just the usual boring old REM statements telling us what the program is, who wrote it and where it comes from. You don't need to type them in.

Line 40 uses a DIM statement to set up an array, *byte$*. All this does is set up nine string variables, *byte$(0)*, *byte(1)*, and so on to *byte$(8)*.

You'll notice that the variables that are DIMmed all

```
 10 REM CHARACTER SHAPER
 20 REM Nigel Peters
 30 REM (C) Electron User
 40 DIM byte$(8)
 50 PROCinput
 60 PROCprint
 70 END
 80 DEF PROCinput
 90 FOR row=1 TO 8
100 REPEAT
110 INPUT "Next number
    "number
120 UNTIL number)=0
    AND number(=255
130 PROCbinary(row,number)
140 NEXT row
150 ENDPROC
160 DEF PROCprint
170 FOR row=1 TO 8
180 PRINT TAB(5) byte$(row)
190 NEXT row
200 ENDPROC
210 DEF PROCbinary(row
    ,number)
220 FOR loop=1 TO 8
230 IF number MOD 2=0

    THEN byte$(row)="'"+byt
    e$(row)
240 IF number MOD 2=1

    THEN byte$(row)="*"+byt
    e$(row)
250 number=number DIV 2
260 NEXT loop
270 ENDPROC
```

This listing is included in this month's cassette tape offer. See order form on Page 47.

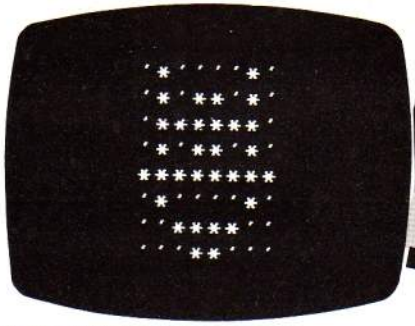

Figure I: Foreground/background pattern

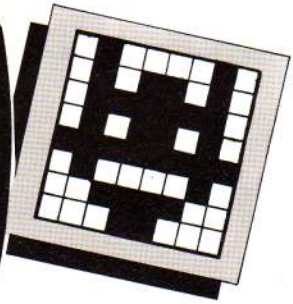

Figure II: Devil's Head grid

up

have names that are exactly the same except for the number in the brackets, the subscript. This comes in useful when you're doing the same sort of thing several times over in a loop.

Each of them is set to the null string, "", for the time being. The null string contains nothing, as you might guess from the fact that there is nothing between the inverted commas.

You'll see this array of variables in action later in the program.

Then come PROCinput and PROCprint and the program ENDs in line 70. In case you're wondering what all the lines from 80 onwards are doing, they're defining the procedures called in lines 50 and 60.

The parts of the program after the END can be looked on as appendices which the Electron consults when the main program calls a procedure such as PROCinput. It's these procedures that do the work.

When Character Shaper is run it reads lines 10, 20 and 30, ignores everything after the REM and goes on to line 40. This sets up the array *byte$()* and then the program goes on to line 50.

Here the micro finds a single word, PROCinput. This tells the Electron to look for a procedure of that name, execute the lines that perform that procedure and then get on with the next line, line 60.

PROCinput is defined between lines 80 and 150. For the most part it consists of a FOR . . . NEXT loop using the loop variable *row*. All this does is to accept eight numbers from the INPUT of line 110 and pass each number to PROCbinary – of which more later.

As you might guess, the eight numbers you supply to the program are the eight figures that give the details of a user-defined character to a VDU23 statement.

These numbers will be translated into the block diagram later in the program.

The REPEAT . . . UNTIL loop of lines 100 and 120 just ensures that the numbers entered in response to line 110's prompt are in the right range.

This has to be from 0 to 255 – any other number has no relevance to a user-defined character.

If the number entered is out of range, the loop ensures that it is ignored and gives you another chance to enter the correct one.

PROCbinary is the part of the program that translates the numbers you enter into the symbols representing the foreground and background colours for each row.

The procedure is defined between lines 210 and 270 and consists of a FOR . . . NEXT loop which cycles eight times.

Two parameters are passed to the procedure, via the brackets after the procedure name, when the main program calls it.

The first is *row*, which as you might guess is the number of the row that the program is dealing with at the moment.

The second variable, *number*, is the number following the VDU23 which determines what the pattern of offs and ons for that row will be.

Lines 230 and 240 just use MOD and DIV to convert *number* into its binary form and store the result in *byte$(row)*. However instead of 0s and 1s the program uses apostrophes and asterisks to record the pattern.

If you don't quite follow the maths, have a look at Mike Bibby's Maths Workout in the April and May issues of *Electron User*.

When PROCinput has called PROCbinary eight times, we have the pattern for all eight rows that make up the user-defined characters. These are held in the variables *byte$(1)*, *byte$(2)*, and so on until *byte$(8)*.

All that PROCprint does is to display these on screen, one after the other, showing the patterns that make up that character. The apostrophe is the background colour, the asterisk the foreground.

So that's how it works. Just try and understand one procedure at a time and all will be made clear.

And now if you have a user-defined character and you want to see how it is made up, just run Character Shaper, enter the eight numbers that come after the VDU23 and your Electron will do the rest.

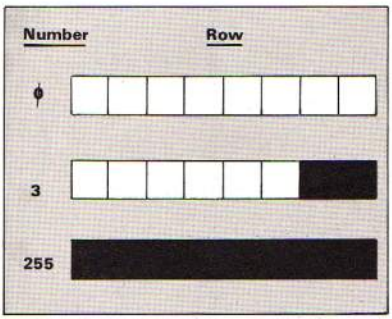

Figure III: How numbers in a VDU23 relate to row patterns

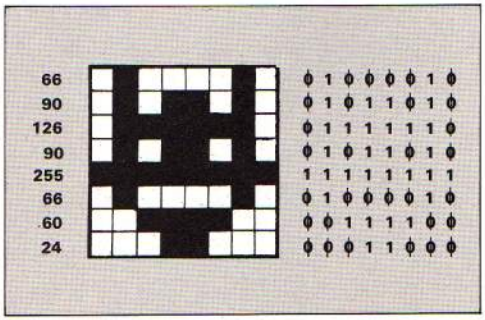

Figure IV: Decimal, binary and a Devil's Head

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```
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This is for PARENT/SUPERVISOR.
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Do you want to enter your own words or
use the pre-set ones (AUTO or MAN)?AUTO
Do you want to enter your own words or
use the pre-set ones (AUTO or MAN)?AUTO
Please enter time delay (1-displayed
only for a very short time TO 9-displa-
ed for a much longer time)?1
How many words will you require?2
What is the child's first name?EILEEN
```

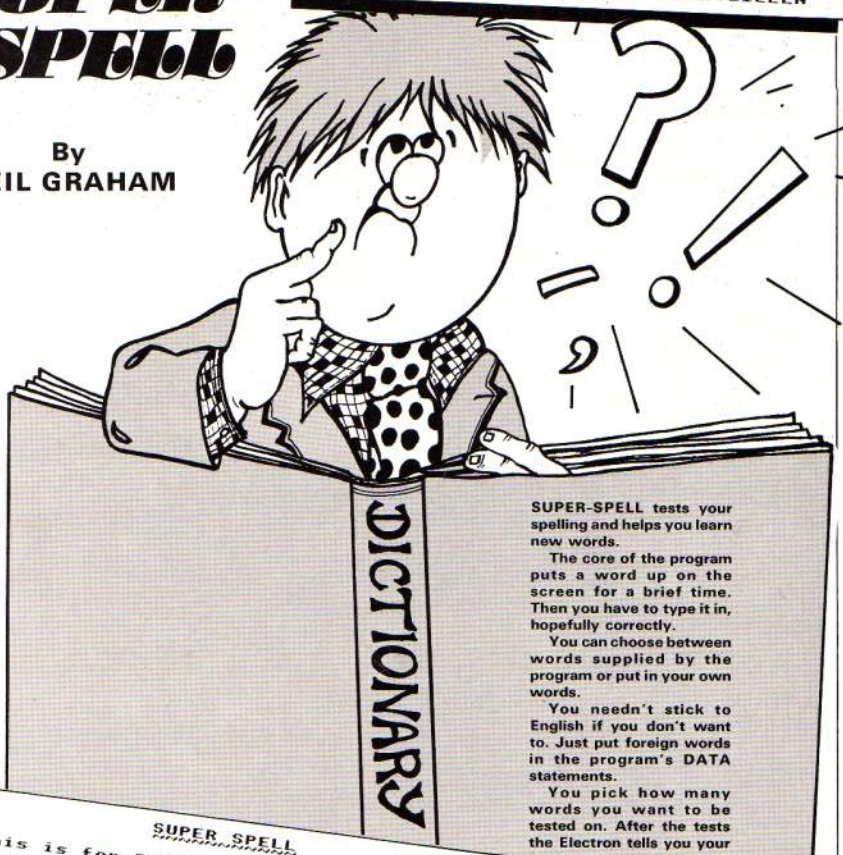

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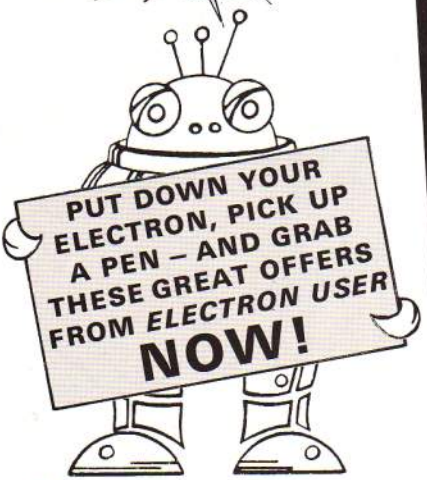
```
SUPER SPELL
This is for PARENT/SUPERVISOR.
PLEASE ANSWER THESE QUESTIONS:
Do you want to enter your own words or
use the pre-set ones (AUTO or MAN)? MAN
Please enter time delay (1-displayed
only for a very short time TO 9-displa-
ed for a much longer time)?3
How many words will you require?23
What is the child's first name?SUSAN
Now type in all the words you require.
word ?
```

Turn to Page 58

electron user



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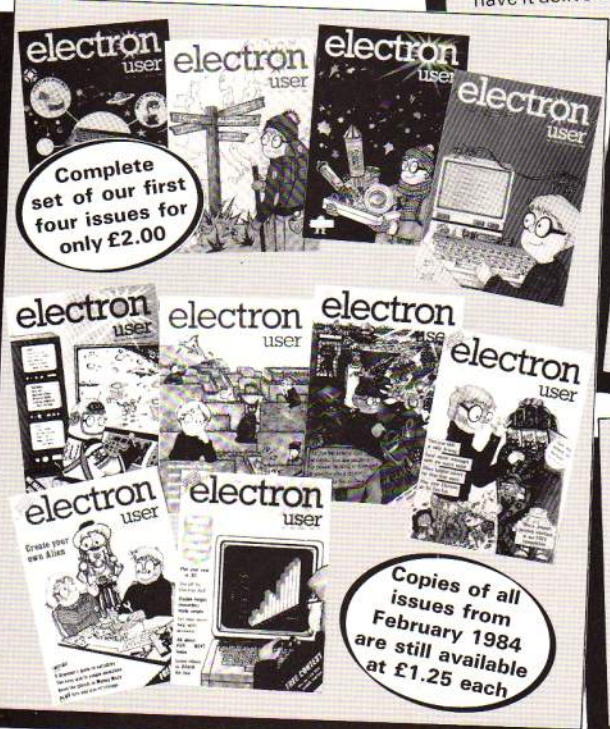

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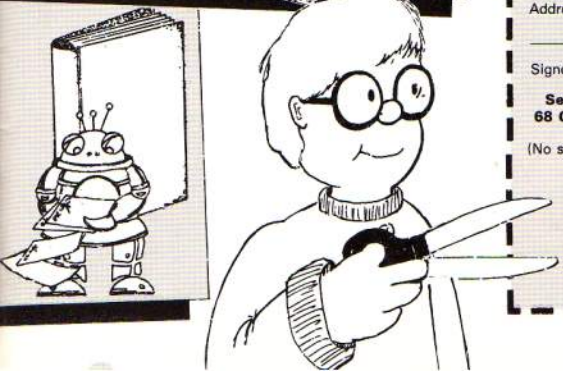

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Casting Agency

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Castle

From Robert Grantham (Aslockton, Notts.)

```
VDU 23,239,170,255,255,
    255,119,99,119,119
VDU 23,240,129,129,129,
    129,0,85,255,255
VDU 23,241,85,255,255,
    255,238,198,238,238
VDU 23,242,127,127,127,
    127,127,127,127,127
VDU 23,243,255,255,255,
    195,195,195,195,195
VDU 23,244,254,254,254,
    254,254,254,254,254
```

Tugboat

From Mark Dean (Gateshead)

```
VDU 23,224,0,2,7,13,
    29,255,127,63
VDU 23,225,0,64,64,64,
    64,255,254,252
```

Punch & Judy

From Sue Elgin (Birmingham)

```
VDU 23,245,255,241,224,
    192,128,160,189,189
VDU 23,246,224,224,224,
    96,32,160,160,160
VDU 23,247,161,255,255,
    170,170,170,170,170
VDU 23,248,160,224,224,
    160,160,160,160,160
VDU 23,249,170,170,170,
    170,170,170,170,255
VDU 23,250,160,160,160,
    160,160,160,160,224
```

Crab

From Janet Byers (Penrith)

```
VDU 23,232,0,0,0,85,
    85,114,34,34
VDU 23,233,60,2,1,0,
    7,8,17,34
VDU 23,234,62,127,235,
    255,255,221,99,62
VDU 23,235,30,32,192,
    128,240,136,68,34
VDU 23,236,4,4,4,
    0,0,0,0,0
VDU 23,237,28,0,0,
    0,0,0,0,0
VDU 23,238,16,16,16,
    0,0,0,0,0
```

Bucket

From Dave Earnshaw (London)

```
VDU 23,228,15,16,32,64,
    128,128,255,255
VDU 23,229,0,128,64,32,
    16,16,240,240
VDU 23,230,255,127,127,
    127,63,63,63,31
VDU 23,231,240,224,224,
    192,192,192,192,128
```

Spade

From Dave Earnshaw (London)

```
VDU 23,226,0,62,8,
    8,8,8,8,8
VDU 23,227,8,8,62,
    62,62,62,62,62
```

THIS month's Casting Agency has a holiday feeling to it. Crabs, tugboats, sandcastles – they're all shapes you might see on the beach during the summer. And while you're on your holidays, how about thinking up some characters for the autumn? There's Hallowe'en in October, Bonfire Night in November and you can guess what happens in December . . .

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Castles of Sand listing

From Page 33

```
300VDU23,237,0,60,4,28,4,4
,4,0
310VDU23,238,0,60,36,60,36
,36,60,0
320VDU23,239,0,60,36,60,4,
4,4,0
330VDU23,240,0,0,48,76,135
,3,0,0
340VDU23,241,0,0,110,255,2
48,159,6,0
350VDU23,242,0,0,111,252,2
40,156,15,0
360DIMPX(19,26),WX(19),HX(
10),H$(10)
370FORAX=0TO10
380HX(AX)=(10-AX)*50
390H$(AX)="Electron User"+
CHR$32+CHR$240+CHR$242
400NEXT
410LE$="I"
420RI$="X"
430UP$=":"
440DD$="/"
450TT$="ZK:/PSFQW"
460REPEAT
470MODE6
480PROCiinit
490REPEAT
500MODE5
510PROCc
520VDU19,1,3,0,0,0,19,2,1,
0,0,0,19,3,4,0,0,0
530SANDX=0
540FORAX=0TO19
550PX(AX,1)=1
560WX(AX)=1
570NEXT
580FORAX=0TO9
590PX(AX,2)=1
600WX(AX)=2
610NEXT
620COLOUR3
630PRINTSTRING$(50,CHR$224
);
640COLOUR1
650FORAX=0TO350
660VDU32
670NEXT
680FORAX=20TO25
690READA$
700FORBX=0TO19
710B$=MID$(A$,BX+1,1)
720IFB$="B" N$=CHR$32:NX=3
:COLOUR129
730IFB$="S" N$=CHR$32:NX=0
:COLOUR1
740IFB$="C" N$="x":NX=2:CO
LOUR3:COLOUR130:SANDX=SANDX+
1
750PRINTTAB(BX,AX);N$;
760PX(BX,AX)=NX
770COLOUR128
780NEXT,
790PRINTSTRING$(40,CHR$32)
;
800COLOUR131
810PRINTSPC(20)
820PROCbarrage(25-LEVEL%)
830COLOUR128
840COLOUR2
850PRINTTAB(0,29);"SCORE:"
;"BONUS:    BEACH:";
860PROCinit
870PROCtext
880PROCdraw(0,0)
890REPEAT
900FORAX=1TOHX
910WPX=WPX+1
920IFWPX=20 WPX=0
930PROCwave
940PROCmove
950NEXT
960PROCmove
970PROCmove
980IFRND(3)=1 BONUSX=BONUS
X-1
990COLOUR1
1000PROCnum(BONUSX,6,31)
1010UNTILDEADXORSANDX=0
1020HX=HX+1
1030PROCtext
1040IFDEADX=0 PROCrestore
1050UNTILDEADX
1060SOUND&10,-15,4,40
1070COLOUR128
1080COLOUR3
1090FORBX=0TO26
1100FORAX=0TO19
1110PX(AX,BX)=0
1120PRINTTAB(AX,BX);CHR$224
1130NEXT,
1140MODE6
1150IF5%<=HX(10) GOTO1410
1160CX=11
1170REPEAT
1180CX=CX-1
1190UNTILHX(CX)>5%ORCX=0
1200CX=CX+1
1210FORAX=10TOCX+1STEP-1
1220HX(AX)=HX(AX-1)
1230H$(AX)=H$(AX-1)
1240NEXT
1250H%(CX)=5%
1260+FX12
1270PROCscores
1280M$=STRING$(7,CHR$32)+"P
LEASE ENTER YOUR NAME!!"+STR
ING$(9,CHR$32)
1290FORAX=1TO39
1300PRINTTAB(AX,0);CHR$229
1310FORA=0TO250
1320NEXT
1330SOUND1,-15,150,1
1340PRINTTAB(AX,0);MID$(M$,
AX,1);CHR$229
1350NEXT
1360PRINTTAB(10,3+CX*2);SPC
(20)
1370INPUTTAB(10,3+CX*2)H$(C
X)
1380IFLEN(H$(CX))>10ANDINST
R(H$(CX),CHR$32) H$(CX)=LEFT
$(H$(CX),INSTR(H$(CX),CHR$32
))ELSEIFLEN(H$(CX))>10 H$(CX
)=LEFT$(H$(CX),10)
1390IFMID$(H$(CX),1,1)>="0"
ANDMID$(H$(CX),1,1)<="9" H$(
CX)=H$(VAL(MID$(H$(CX),1,1))
)
1400H$(CX)=H$(CX)+CHR$32+CH
R$229
1410PROCscores
1420REPEATUNTILGET=32
1430IFINKEY(-2) PROCsave
1440RESTORE
1450UNTIL0
1460DATA"BSSSSSSSCSCSCSSSSS
SB"
1470DATA"BBSSSSSSCCCCCSSSSS
BB"
1480DATA"BBBSSSSSCCCCCSSSSB
BB"
1490DATA"BBBBSSSSCCCCCSSSBB
BB"
1500DATA"BBBBSSSSCCCCCSSSBB
BB"
1510DATA"BBBBSSSSCCCCCSSSBB
BB"
1520DEFPROCbarrage(BX)
1530COLOUR129
1540FORAX=0TOBX
1550REPEAT
1560XX=RND(19)-1
1570YY=3+RND(8)
1580UNTILPX(XX,YX)=0ANDPX(X
X+1,YX)=0ANDPX(XX+1,YX+1)=0A
NDPX(XX,YX+1)=0
1590P%(XX,YX)=3
1600PX(XX+1,YX)=3
1610PX(XX+1,YX+1)=3
1620P%(XX,YX+1)=3
1630PRINTTAB(XX,YX);SPC(2);
TAB(XX,YX+1);SPC(2)
1640NEXT
1650ENDPROC
1660DEFPROCiinit
1670LEVEL%=1
1680S%=0
1690PRINT"What level? 1-3"
1700REPEAT
1710H%=VALGET$
1720UNTILH%)0ANDH%(4
1730IFH%=3 H%=4
1740ENDPROC
1750DEFPROCinit
1760BONUS%=1500
1770X%=9
1780Y%=16
1790CX%=0
1800CY%=0
1810WPX=9
1820XD%=0
1830YD%=-1
1840CR%=0
1850FAST%=-1
1860WX%=0
1870WY%=0
1880WORM%=1
1890WAVE%=1
1900SOUND0,1,5,50
1910ENDPROC
1920DEFPROCtext
1930COLOUR1
1940PROCnum(S%,6,29)
1950PROCnum(BONUS%,6,31)
1960PROCnum(LEVEL%,17,31)
1970ENDPROC
1980DEFPROCnum(N%,X,Y)
1990S$=STR$(N%)
2000T$=""
2010FORLOOP%=1TOLEN$
2020T$=T$+CHR$(ASC(MID$(S$,
LOOP%,1))+182)
2030NEXT
2040IFN%=0 T$=CHR$230
2050PRINTTAB(X,Y);T$;
2060IFX=6ANDY=31ORX=6ANDY=2
9 PRINTSPC(1);
2070ENDPROC
2080DEFPROCwave
2090PROCworm
2100IFWPX=0 WAVE%=(WAVE%+1)
MOD2:IFWAVE%=0 SOUND&10,1,5,
50
2110IFWX(WPX)=26 ENDPROC
2120T%=PX(WPX,WX(WPX)+1)
2130IFT%=0 WX(WPX)=WX(WPX)+
1:COLOUR3:PRINTTAB(WPX,WX(WP
X));CHR$224:PX(WPX,WX(WPX))=
1:ENDPROC
2140IFT%(3ORT%)5 ENDPROC
2150IFLEVEL%)15 N%=0 ELSEN%
```

→

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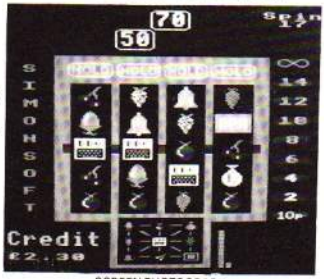

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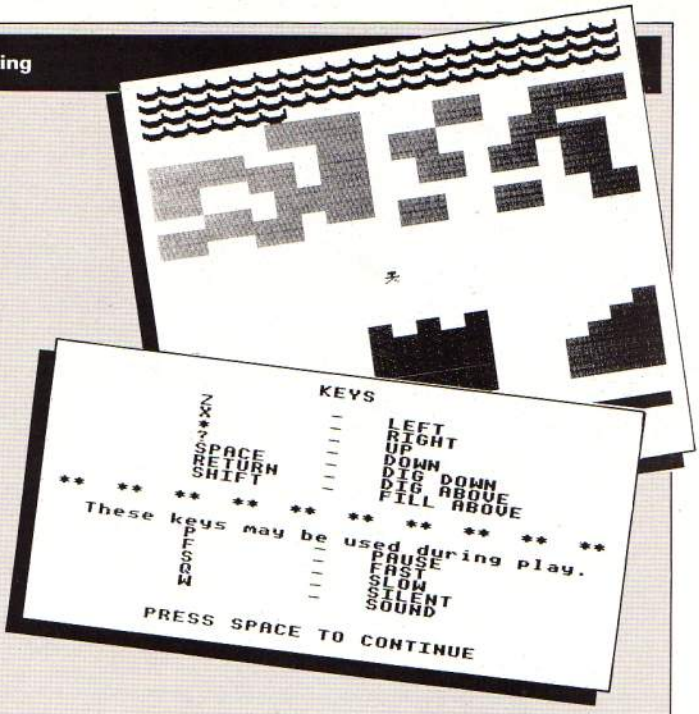
Castles of Sand listing

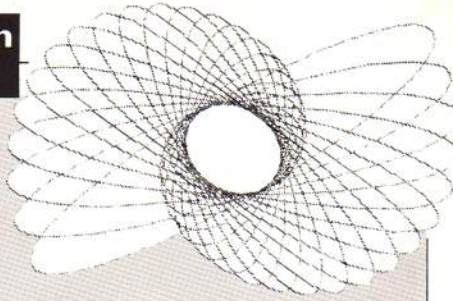


From Page 53

```
=15-LEVEL%
 2160IFRND(NX)=1 P%(WP%,W%(W
P%)+1)=T%+1
 2170IFP%(WP%,W%(WP%)+1)=6 P
%(WP%,W%(WP%)+1)=1:W%(WP%)=W
%(WP%)+1:COLOUR3:PRINTTAB(WP
%,W%(WP%));CHR$224:SOUND3,-1
0,10,10:ENDPROC
 2180ENDPROC
 2190DEFPROCmove
 2200PROCdeadcheck
 2210IFDEAD% ENDPROC
 2220T$=INKEY$(0)
 2230*FX21
 2240IFINSTR(TT$,T$)=0 GOTO2
340
 2250IFT$=LE$ PROCleft
 2260IFT$=RI$ PROCright
 2270IFT$=UP$ PROCup
 2280IFT$=DO$ PROCdown
 2290IFT$="P" PROCpause
 2300IFT$="S" FAST%=0 ELSEIF
T$="F" FAST%=-1
 2310IFT$="Q" THEN *FX210,1
 2320IFT$="W" THEN *FX210,0
 2330IFFAST%=0 FORA=0TO250:N
EXT
 2340IFINKEY(-99)ANDY%<>26 S
H%=1:PROCdig
 2350IFINKEY(-1) PROCfill
 2360IFINKEY(-74) SH%=-1:PRO
Cdig
 2370PROCdeadcheck
 2380ENDPROC
 2390DEFPROCleft
 2400IFX%=0 ENDPROC
 2410IFP%(X%-1,Y%))-1ANDP%(X
%-1,Y%)<3 PROCdraw(-1,0)
 2420ENDPROC
 2430DEFPROCright
 2440IFX%=19 ENDPROC
 2450IFP%(X%+1,Y%))-1ANDP%(X
%+1,Y%)<3 PROCdraw(1,0)
 2460ENDPROC
 2470DEFPROCup
 2480IFY%=0 ENDPROC
 2490IFP%(X%,Y%-1))-1ANDP%(X
%,Y%-1)<3 PROCdraw(0,-1)
 2500ENDPROC
 2510DEFPROCdown
 2520IFY%=26 ENDPROC
 2530IFP%(X%,Y%+1))-1ANDP%(X
%,Y%+1)<3 PROCdraw(0,1)
 2540ENDPROC
 2550DEFPROCdraw(DX,DY%)
 2560IFP%(X%,Y%)=2 COLOUR130
:COLOUR3:PRINTTAB(X%,Y%);"x"
:COLOUR128:GOTO2590
 2570COLOUR1
 2580PRINTTAB(X%,Y%);SPC(1)
 2590COLOUR2
 2600X%=X%+D%
 2610Y%=Y%+DY%
 2620XD%=D%
 2630YD%=DY%
 2640PRINTTAB(X%,Y%);CHR$(22
8+CR%)
 2650ENDPROC
 2660DEFPROCdeadcheck
 2670IFBONUS%(10RP%(X%,Y%)=1
DEAD%=-1 ELSEDEAD%=0
 2680ENDPROC
 2690DEFPROCdig
 2700D%=P%(X%,Y%+SH%)
 2710IFD%(>3ANDD%(>6 ENDPROC
 2720IFD%=6ANDH%=4 ENDPROC
 2730IFCR%=1 ENDPROC
 2740FORN%=0TO2
 2750FORM%=0TO3
 2760SOUND2,-15,50,0
 2770NEXT
 2780SOUND2,0,0,5
 2790NEXT
 2800IFD%=3 P%(X%,Y%+SH%)=0:
COLOUR1:COLOUR128 ELSEP%(X%,
Y%+SH%)=2:S%=S%-24:PROCtext:
SAND%=SAND%+1:COLOUR130:COLO
UR3
 2810IFD%=3 PRINTTAB(X%,Y%+S
H%);SPC(1) ELSEPRINTTAB(X%,Y
%+SH%);"x"
 2820CR%=1
 2830COLOUR1
 2840COLOUR128
 2850PROCdraw(0,0)
 2860ENDPROC
 2870DEFPROCfill
 2880IFY%-1=-1 ENDPROC
 2890D%=P%(X%,Y%-1)
 2900IFD%(>0ANDD%(>2ORCR%=0
ENDPROC
 2910SOUND2,-10,10,10
 2920IFD%=0 P%(X%,Y%-1)=3 EL
SE P%(X%,Y%-1)=6:S%=S%+25:SA
ND%=SAND%-1:SOUND2,-10,5,10:
PROCtext
 2930CR%=0
 2940PROCdraw(0,0)
 2950D%=P%(X%,Y%-1)
 2960COLOUR129
 2970PRINTTAB(X%,Y%-1);CHR$(
32)
 2980COLOUR128
 2990ENDPROC
 3000DEFPROCend
 3010*FX12
 3020*FX12,2
 3030REPORT
 3040PRINT" at line ";ERL
 3050END
 3060DEFPROCrestore
 3070RESTORE1460
 3080FORB%=0TO25
 3090FORA%=0TO19
 3100P%(A%,B%)=0
 3110NEXT,
 3120LEVEL%=LEVEL%+1
 3130FORA=0TO255STEP0.2
 3140SOUND1,-15,A,0
 3150SOUND2,-15,255-A,0
 3160NEXT
 3170VDU19,3,0,0,0,0
 3180FORA%=-15TO0
 3190SOUND1,A%,100,1
 3200SOUND1,A%,101,1
 3210SOUND1,A%,100,1
 3220SOUND1,A%,99,1
 3230NEXT
 3240COLOUR1
 3250FORA%=0TO252STEP13
 3260FORB%=225TO227
 3270A$=STRING$(4,CHR$(B%))+
CHR$32+STRING$(5,CHR$(B%))
 3280PRINTTAB(5,16);A$
```

Run rings around your screen with MIKE COOK'S . . .

THE FAST ELLIPSE



```
10 REM (C) ELECTRON USER
20 DAFT=FALSE
30 REPEAT
40 MODE 1
50 PRINT TAB(0,15);"THE
   FAST ELLIPSE"
60 PRINT
70 PRINT "By Mike Cook"
80 PROC_HOLD
90 MODE 0
100 FOR I=400 TO 0 STEP -40
110 PROC_ELLIPSE(640,512
   ,400,I,90,40)
120 PROC_ELLIPSE(640,512
   ,400,I,0,40)
130 NEXT
140 PROC_HOLD
150 FOR I=30 TO 250 STEP 10
160 PROC_ELLIPSE(640,512
   ,(I+20)*2,100,I,40)
170 NEXT
180 PROC_HOLD
190 FOR I=1 TO 180 STEP 10
200 PROC_ELLIPSE(640,512
   ,400,100,I,40)
210 NEXT
220 PROC_HOLD
230 UNTIL DAFT
240 DEF PROC_HOLD
250 FOR A=1 TO 9000
260 NEXT
270 CLS
280 ENDPROC
290 REM X%,Y% THE CO-ORDNATS
    OF THE CENTER
300 REM MA% THE SEMI-MAJOR
    AXIS
310 REM MI% THE SEMI-MINOR
    AXIS
320 REM I THE INCLNATION
    IN DEGREES
330 REM N% THE NUMBER OF
    POINTS
340 DEF PROC_ELLIPSE(X%
   ,Y%,MA%,MI%,I,N%)
350 LOCAL P,C1,S1,C2,S2
   ,C3,S3,A%,XT%,YT%,T
   ,X1,Y1
360 P=2*PI /(N%-1)
370 I=RAD (I)
380 C1=COS (I)
390 S1=SIN (I)
400 C2=COS (P)
410 S2=SIN (P)
420 C3=1
430 S3=0
440 FOR A%=1 TO N%
450 X1=MA%*C3
460 Y1=MI%*S3
470 XT%=X%+X1*C1-Y1*S1
480 YT%=Y%+X1*S1+Y1*C1
490 IF A%=1
    THEN MOVE XT%,YT%
    ELSE DRAW XT%,YT%
500 T=C3*C2-S3*S2
510 S3=S3*C2+C3*S2
520 C3=T
530 NEXT
540 ENDPROC
```

This listing is included in this month's cassette tape offer. See order form on Page 47.

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Castles of Sand listing

From Page 55

```
 3290SOUND1,-15,A%+BX-224,1
 3300FORA=0TO100:NEXT
 3310NEXT,
 3320PRINTTAB(5,16);"Well Do
ne!"
 3330SOUND1,-15,50,10
 3340SX=SX+BONUSX
 3350PROCtext
 3360FORA=0TO10000
 3370NEXT
 3380ENDPROC
 3390DEFPROCscores
 3400CLS
 3410*FX15
 3420PRINTSPC(3)"T O D A Y '
S";SPC(3);"G R E A T E S T
 !"''
 3430FORA%=1TO10
 3440PRINTTAB(0,3+A%*2);H%(A
%);".....";TAB(10,3+A%*
2);H$(A%);SPC(20);
 3450NEXT
 3460ENDPROC
 3470DEFPROCpause
 3480FORA=0TO100
 3490NEXT
 3500REPEATUNTILGET$="P"
 3510ENDPROC
 3520DEFPROCsave
 3530CLS
 3540PRINT"Do you want to Lo
ad or Save? L/S"
 3550REPEATG$=GET$
 3560UNTILG$="L"ORG$="S"
 3570PRINT"Put the tape in t
he right place.""Then press
 space."
 3580IFG$="L" GOTO3670
 3590REPEATUNTILGET=32
 3600F%=OPENOUT("H.SCO.SAND"
)
 3610FORA%=0TO9
 3620PRINT#F%,H%(A%),H$(A%)
 3630NEXT
 3640CLOSE#F%
 3650VDU7
 3660ENDPROC
 3670F%=OPENIN("H.SCO.SAND")
 3680FORA%=0TO9
 3690INPUT#F%,H%(A%),H$(A%)
 3700NEXT
 3710CLOSE#F%
 3720VDU7
 3730ENDPROC
 3740DEFPROCworm
 3750IFWX%=0ANDWY%=0ANDRND(1
00)<>1 ENDPROC
 3760IFWX%=0ANDWY%=0 WY%=12+
RND(4):IFPX(0,WY%)<>OORPX(1,
WY%)<>OORPX(2,WY%)<>OORPX(3,
WY%)<>0 ENDPROC
 3770IFWORM%=0ANDRND(2)=1 WX
%=WX%+1
 3780IFWX%=17 PRINTTAB(WX%,W
Y%);SPC(3):PROCfillup:WX%=0:
WY%=0:ENDPROC
 3790WORM%=(WORM%+1)MOD2
 3800W$=CHR$240+CHR$(241+WOR
M%)
 3810COLOUR2
 3820PRINTTAB(WX%,WY%);SPC(1
);W$
 3830IFPX(WX%,WY%)=1 COLOUR3
:PRINTTAB(WX%,WY%);CHR$224
 3840IFX%>WX%-1ANDX%<WX%+4AN
DY%=WY% BONUS%=BONUS%-2:CR%=
0
 3850IFX%>WX%-1ANDX%<WX%+4AN
DY%=WY%
 3860IFPX(WX%+3,WY%)<>0ANDP%
(WX%+3,WY%)<1 GOTO3880
 3870ENDPROC
 3880IFPX(WX%+3,WY%)<>3 PRIN
TTAB(WX%+1,WY%);SPC(2):WX%=0
:WY%=0:ENDPROC
 3890P%(WX%+3,WY%)=0
 3900PRINTTAB(WX%,WY%);SPC(4
)
 3910WX%=0
 3920WY%=0
 3930ENDPROC
 3940DEFPROCfillup
 3950COLOUR3
 3960FORZX=WX%TO19
 3970IFP%(ZX,WY%)=1 PRINTTAB
(Z%,WY%);CHR$224
 3980NEXT
 3990ENDPROC
 4000DATA"NFFFFLFFSSSSFFBBLM
LLLSSSSBLLFFMLTFSSSSBTBBRMLL
RSSSSBLFBFMFFFSSSSFLNN"
 4010DATA"SFFFOSSSSFFFFSSSSL
BBBSSSSLBBBSSSSFFBBSSSSFFBBS
SSSRBBBSSSSRBB8SSSSFBBFSSSSF
BBO"
 4020DEFPROCtitles
 4030F$=CHR$224
 4040S$=CHR$32
 4050RESTORE4000
 4060CLS
 4070READA$
 4080FORA%=1TOLENA$
 4090B$=MID$(A$,A%,1)
 4100IFB$="S" PRINTS$;
 4110IFB$="F" PRINTS$;F$;F$;
F$;
 4120IFB$="L" PRINTS$;F$;S$;
S$;
 4130IFB$="R" PRINTS$;S$;S$;
F$;
 4140IFB$="B" PRINTS$;F$;S$;
F$;
 4150IFB$="T" PRINTS$;F$;F$;
S$;
 4160IFB$="M" PRINTS$;S$;F$;
S$;
 4170IFB$="N" PRINT
 4180NEXT
 4190READA$
 4200FORA%=1TOLENA$
 4210B$=MID$(A$,A%,1)
 4220IFB$="S" PRINTS$;S$;
 4230IFB$="F" PRINTS$;S$;F$;
F$;F$;F$;F$;F$;
 4240IFB$="L" PRINTS$;S$;F$;
F$;S$;S$;S$;S$;
 4250IFB$="R" PRINTS$;S$;S$;
S$;S$;S$;F$;F$;
 4260IFB$="B" PRINTS$;S$;F$;
F$;S$;S$;F$;F$;
 4270IFB$="T" PRINTS$;S$;F$;
F$;F$;F$;S$;S$;
 4280IFB$="O" PRINTS$;S$;F$;
F$;F$;F$;F$;S$;
 4290IFB$="M" PRINTS$;S$;S$;
S$;F$;F$;S$;S$;
 4300IFB$="N" PRINT
 4310NEXT
 4320PRINT''''''TAB(18);"By"'
''TAB(12);"Martin  Hollis"
 4330PROCspc
 4340ENDPROC
 4350DEFPROCspc
 4360PRINT''SPC(8);"PRESS SP
ACE TO CONTINUE"
 4370REPEAT
 4380UNTILGET=32
 4390CLS
 4400ENDPROC
 4410DEFPROCinstr
 4420PRINT''''The object of t
he game is to fill in"'"the
sand castle with sand from t
he"'"beach. The sea is advan
cing slowly"'"towards the bo
ttom of the screen."'"Any sa
nd it meets is slowly washed
"'"away but don't worry, the
 sea can't"
 4430PRINT"eat your castle -
but it will wash"'"away any
other sand it meets!"''"You
must position the man above
or"'"below the sand you wan
t to dig and"'"then pick it
up in your bucket. When"'"yo
u drop the sand it fills in
the"
 4440PRINT"block directly ab
ove you. Everytime"'"you fil
l in a block of the castle"'
"you score 25 points."
 4450PROCspc
 4460PRINT''"When you've use
d all the sand at"'"each sid
e you can collect more from"
'"the top of the screen but
beware the"'"hungry sandworm
 crossing your path!"'"If he
 catches you when your bucke
t is"
 4470PRINT"full he will eat
your sand. However"'"you are
 still alive to dig for more
."''"You can only die if the
sea drowns"'"you or if your
bonus falls to zero."'"When
you die the Hiscore Table i
s"
 4480PRINT"displayed. If you
 wish to SAVE the"'"Hiscore
Table for another day"'"PRES
S (CTRL SPACE)."
 4490PROCspc
 4500PRINTTAB(18,2)"KEYS"
 4510FORA%=4TO10
 4520READL$,W$
 4530PRINTTAB(10,A%);L$;TAB(
19,A%);"-";TAB(23,A%);W$
 4540NEXT
 4550PRINT STRING$(10,CHR$32
+"**"+CHR$32)
 4560PRINTSPC(3);"These keys
may be used during play."
 4570FORA%=15TO19
 4580READL$,W$
 4590PRINTTAB(10,A%);L$;TAB(
19,A%);"-";TAB(23,A%);W$
 4600NEXT
 4610PROCspc
 4620ENDPROC
 4630DATAZ,LEFT,X,RIGHT,*,UP
,?,DOWN,SPACE,DIG DOWN,RETUR
N,DIG ABOVE,SHIFT,FILL ABOVE
,P,PAUSE,F,FAST,S,SLOW,Q,SIL
ENT,W,SOUND
 4640DEFPROCc
 4650VDU23;8202;0;0;0;
 4660ENDPROC
```

This listing is included in this month's cassette tape offer. See order form on Page 47.

From Page 45

This listing was produced using a special formatter which breaks one program line over several lines of listing. When entering a line don't press Return until you come to the next line number. Full details of the formatter are given on Page 4 of the February issue.

```
 10 REM ********************
    *******
 20 REM ** **
 30 REM ** Super-Spell
    **
 40 REM ** by N.Graham
    **
 50 REM ** **
 56 REM ** **
 60 REM ** For ELECTRON
    User(C) **
 70 REM ** **
 80 REM ********************
 90 MODE 6
    :REM #PUT IT IN MODE
    6#
100 PROCinit
110 PROCscreen
120 PROCtest
130 PROCaessage
140 PROCend
150 END
160 DEF PROCinit
170 REM -=-=-= ON ERROR
    GOTO ERL =-=-=
175 apointer=630
180 number=1
190 teapo=0
200 CLS
210 VDU 19,1,2,0,0,0
220 LET prog$="SUPER SPELL"
230 PRINT "
        ";prog$
240 PRINT "
        ^^^^^^^^^^^^
250 PRINT '"This is for
    PARENT/SUPERVISOR."
260 PRINT '"PLEASE ANSWER
    THESE QUESTIONS:"
270 INPUT '"Do you want
    to enter your own
    words or  use the
    pre-set ones (AUTO
    or MAN)",which$
280 IF which$="AUTO"
    OR which$="auto"
    OR which$="MAN"
    OR which$="man"
    THEN GOTO 290
    ELSE GOTO 270
290 INPUT '"Please enter
    time delay (1-displaye
    d    only for a very
    short time TO 9-displa
    - ed for a much longer
    time)",teapo
300 IF teapo <1 OR teapo
    >9
    THEN GOTO 290
310 INPUT '"How many words
    will you require"
    ,number
320 IF number < 1
    THEN GOTO 310
330 INPUT '"What is the
    child's first name"
    ,child$
340 IF which$="AUTO"
    OR which$="auto"
    THEN PROCdata
350 IF which$="AUTO"
    OR which$="auto"
    THEN GOTO 440
360 PRINT '"Now type in
    all the words you
    require."
370 DIM word$(number)
380 DIM special$(number)
390 FOR A=1 TO number
400 INPUT "word ",word$(A)
410 B=LEN (word$(A))
420 IF B<2
    THEN PRINT "Error.Try
    again."
    :GOTO 400
430 NEXT A
440 CLS
450 SOUND 1,-10,100,10
    :SOUND 1,-10,200,5
460 PRINT "Thank you very
    much.Press any key
    to    begin the test."
470 correct=0
480 LET A=GET
490 ENDPROC
500 DEF PROCdata
510 line=RND(7)
520 lineb=INT (line)
530 IF lineb=-1
    THEN LET apointer=600
    :IF lineb=1 OR lineb=2
    OR lineb=0
    THEN LET apointer=610
535 IF lineb=3 OR lineb=4
    THEN LET apointer=620
    :IF lineb=5 OR lineb=6
    THEN LET apointer=630
538 RESTORE apointer
550 DIM word$(number)
560 DIM special$(number)
570 FOR A=1 TO number
580 READ word$(A)
    :IF word$(number)=
    "**"
    THEN RESTORE 600
590 NEXT A
600 DATA ACCEPT,CEREAL
    ,EXPENSE,LILIES,PNEUMAT
    IC,SKILFUL,ACCIDENTALLY
    ,CEREMONY,EXPLANATION
    ,LITERATURE,POISONOUS
    ,SOLICITOR
610 DATA ACCOMMODATION
    ,CHANGEABLE,EXTRAVAGANT
    ,POSSESSED,SPEECH
    ,ACHE,CHOOSE,EXTREMELY
    ,PREFERRED,STONY,ACQUAI
    NTANCE,CHOSE
620 DATA FASCINATING,LOVABL
    E,PREPARATION,SUCCESFUL
    ,ACROSS,COCONUT,FEBRUAR
    Y,MAINTENANCE,PRINCIPAL
    LY,"SURELY"
630 DATA RHYME,PAID,PEASANT
    ,REMEMBRANCE,ACCASION
    ,REGARD,NINETEEN,METAPH
    OR,BURIED,GUARD,OBLIGE
    ,DISGUST,PARLIAMENT
    ,"MINIATURE"
640 DATA GRAMMAR,RIPE
    ,SATELLITE,WALLABY
    ,YACHT,PIGEON,MOUSTACHE
    ,VEHICLE,DISAPEAR
    ,EVAPOURATE,FULFILED
    ,"PERFORMANCE","**"
650 ENDPROC
660 DEF PROCscreen
670 CLS
680 VDU 19,7,1,0,0,0
690 PRINT "
        ";prog$
700 PRINT "
        ^^^^^^^^^^^^
710 PRINT "Hello, ";child$;
    ", are you all right
    ";
720 INPUT a$
730 PRINT
740 IF a$="YES" OR a$=
    "Y"
    THEN PRINT "Good.I'm
    very glad to hear
    that."
    ELSE PRINT "Oh.I'm
    very sad to hear that!
    "
750 PRINT '"Oh well,lets
    get on with the quiz."
760 PRINT '"Press any key
    to begin."
770 LET A=GET
780 ENDPROC
790 DEF PROCtest
800 VDU 19,7,3,0,0,0
810 CLS
820 PRINT "
        ";prog$
830 PRINT "
        ^^^^^^^^^^^^
840 FOR A=1 TO nuaber
850 PRINT '"Type the word..
    .."
860 PRINT word$(A)
870 FOR limit=1 TO (teapo*5
    00)
880 NEXT limit
890 PRINT TAB(0,4)"
                "
900 PRINT "NOW!"
910 PRINT '''
920 INPUT answer$
930 IF answer$<>word$(A)
    THEN PRINT "WRONG!It
    should have been ";wor
    d$(A)
    :LET special$(A)="WRONG
    !"
    :SOUND 1,-15,1,5
    ELSE PRINT "CORRECT!Ver
    y good ";child$
    :correct=correct+1
    :special$(A)="CORRECT!"
    :SOUND 1,-15,200,5
940 PRINT '"PRESS ANY KEY
    TO CONTINUE"
950 B=GET
960 CLS
970 PRINT "
        ";prog$
980 PRINT "
        ^^^^^^^^^^^^
990 NEXT A
1000 VDU 19,7,4,0,0,0
1010 ENDPROC
1020 DEF PROCaessage
1030 CLS
1040 PRINT "
        ";prog$
1050 PRINT "
        ^^^^^^^^^^^^
1060 PRINT '"Well ";child$;
```

```
    " you scored"
1070 PRINT 'correct;" out
     of ";number
1080 PRINT '"Do you think
     this score is good
     or bad"
1090 INPUT thought$
1100 IF thought$ ="GOOD"
     OR thought$ ="good"
     OR thought$ ="BAD"
     OR thought$="bad"
     THEN GOTO 1110
     ELSE GOTO 1030
1110 INPUT '"Did you enjoy
     it",enjoy$
1120 IF enjoy$="YES"
     OR enjoy$="Y"
     THEN PRINT "Good.I'm
     glad about that."
     ELSE PRINT "Oh,I'm
     sorry.I'll try harder
     next time!"
1130 PRINT "Anyway it is
     time for me to see
     your    parent or
     teacher so GOODBYE
     ";child$;" hope I
     see you again soon!"
1140 INPUT ''"PRESS <RETURN>
     WHEN HE OR SHE COMES"A
     $
1150 ENDPROC
1160 DEF PROCend
1170 CLS
1180 VDU 19,7,2,0,0,0
1190 PRINT "
          ";prog$
1200 PRINT "
          ^^^^^^^^^^^^
1210 PRINT 'child$;" got
     ";correct;" out of
     ";number;" at SUPER-SP
     ELL"
1220 PRINT '"In his opinion
     he was ";thought$
1230 PRINT '"THESE WERE
     THE WORDS HE WAS TESTE
     D ON:"
1240 PRINT
1250 FOR A=1 TO number
1260 PRINT SPC (12);word$(A)
     ;TAB(30);special$(A)
1270 NEXT A
1280 PRINT '"PRESS SPACE
     BAR TO CONTINUE"
1290 REPEAT
     :A=GET
     :UNTIL A=32
1300 CLS
1310 PRINT "
          ";prog$
1320 PRINT "
          ^^^^^^^^^^^^
1330 PRINT '"Do you wish
     to re-run this progra
     m";
1340 INPUT A$
1350 IF A$="Y" OR A$="YES"
     THEN RUN
1360 INPUT "Are you sure
     (Y/N) "A$
1370 IF A$="N" OR A$="NO"
     THEN RUN
1380 REM ********************
1390 REM ** **
1400 REM ** SELF DESTRUCT **
1410 REM ** **
1420 REM ********************
1430 PRINT '"I am now 'self
     destructing' there
     will  be no trace
     of me in memory"
1435 FOR delay=1 TO 500
     :NEXT delay
1440 CLEAR
     :MODE 6
1450 *FX 138,0,78
1460 *FX 138,0,69
1470 *FX 138,0,87
1480 *FX 138,0,13
1490 REM ********************
1500 REM ** **
1510 REM ** THE END **
1520 REM ** **
1530 REM ********************
1540 END
     :END
     :END
```

This listing is included in this month's cassette tape offer. See order form on Page 47.

Tutorial Software Ltd.

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. . . 'Very good indeed' . . . A&B Computing – Jan/Feb 1984.

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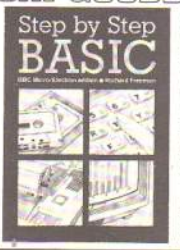

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Micro Messages

Joy for First Byte interface owners!

DUE to further development work, owners of the First Byte Joystick interface can now use it with all Acornsoft games and any others that have an analogue joystick option, as well as games that use only keys.

The program listed here should be very carefully entered on the Electron, but please save it before you run.

Once the routine has been run it will stay in the machine, even if the Break key is pressed. All you then do is load up the game as normal and choose the joystick option.

We have tried the routine on all presently available games with an analogue joystick option and have so far had a 100 per cent success rate. This now means the interface works on 99 per cent of games on the market. – **Ray Threadgould, FBC Systems, Derby.**

```
   1 REM Title     :FBC Ad
val-Switched Joystick Routi
ne.
   2 REM Author    :ALAN C
OATS
   3 REM Copyright :ACSOFT
'84 - FBC SYSTEMS LTD.
   4 :
   5 OS=?&20A+(?&20B)*256:
P=&FCC0:U=&1:D=&2:L=&4:R=&8
:F=&10
   6 FOR A%=0 TO 1:P%=&110
:[OPT A%*2
   7 .JB EQUB &20
   8 .J BRK
   9 .X JMP OS
  10 .S CMP #&80:BNE X:CPX
#&5:BCS X
  11 .I LDA P:BIT JB:BEQ I
2:EOR #&1F
  12 .I2 STA J:CPX #&0:BNE
JM
  13 .FI LDY #&0:LDX #&0:L
DA J:AND #F:BEQ JX:LDX #&3:
BNE JX
  14 .JM TXA:LDX #&FF:LDY
#&7F:AND #&1: BNE HM
  15 .VM LDA J:AND #U:BEQ
NU:LDY #&FF:BNE JX
  16 .NU LDA J:AND #D:BEQ
JX:LDX #&0:LDY #&0:BEQ JX
  17 .HM LDA J:AND #L:BEQ
NL:LDY #&FF:BNE JX
  18 .NL LDA J:AND #R:BEQ
JX:LDY #0:LDX #0
  19 .JX LDA #&80:RTS
  20 .SU PHA:LDA #S MOD 25
6:STA &20A:LDA #S DIV 256:S
TA &20B:PLA:RTS
  21  ]:NEXT
  22 MODE6:PRINT"FBC Adva
l-Switched Joystick Routine
."
  23 PRINT"Now load game
as normal....."'''
  24 *FX247,76,0
  25 OSCLI("FX248,"+STR$(S
U MOD 256)+",0)
  26 OSCLI("FX249,"+STR$(S
U DIV 256)+",0)
  27 CALL SU:END
```

Sanyo saves first time

IN response to M. Senior's letter in the June edition of Electron User, I bought a Sanyo DR101 Data Recorder with a seven pin DIN lead from my local Curry's for £32.95.

This was £10 cheaper than the same model at my local computer shop. It always saves first time. – **Andy Conway, Cheltenham, Gloucestershire.**

Sound advice from dealer

I BOUGHT a Lloytron V171 on the advice of a local computer dealer for £24.95.

This, along with a seven DIN to split microphone, earphone, remote lead – for an extra £3 – has worked perfectly. It's important that the earphone and microphone leads are not put in the wrong sockets.

Having established which was which, I marked them to avoid future confusion and since I found the optimum volume level – a quarter of its full potential – I've had no problems at all. – **Yvonne Wilkin, Alveley, Shropshire.**

Expensive, but worth it

AFTER initially trying various recorders that were unsatisfactory I have now settled for a Sony TCM 737.

Although a little more expensive than some recorders, this machine does seem to both load and save perfectly virtually every time.

I hope this information may be of use to other Electron owners. – **H.E. Pressey, Wolverhamption.**

Not lost a minute

AFTER initial problems with an old recorder we bought a CR 375 from Boots. This has a counter and easily operated volume and tone controls.

We haven't lost a minute's computing time due to difficulties with loading and saving since. It does both functions perfectly. — **Mrs N. Judge, Buxton, Derbyshire.**

Magic of Superscope

THE cassette recorder I recommend is Superscope, available from Boots and the other High Street shops.

It costs about £38 and saves and loads like magic on the automatic recording level. I've had no problems with it at all. – **Brian Brown, Worksop, Notts.**

Trouble free Ferguson

MY son has had an Electron for nearly two months and loading and saving has been consistently trouble free. My recorder is the Ferguson Model 3T07 and I have the volume set at approximately three

→

WHAT would you like to see in future issues of Electron User?

What tips have you picked up that could help other readers?

Now's here is your opportunity to share your experiences.

Remember that these are the pages that you write yourselves. So tear yourself away from your Electron keyboard and drop us a line.

The address is:

Micro Messages
Electron User
Europa House
68 Chester Road
Hazel Grove
Stockport
SK7 5NY.

Micro Messages

From Page 61

quarters of its maximum. – **K.R. Towers, Preston, Lancs.**

Timely praise

I WOULD like to recommend my recorder. It works with my Electron and has also worked with a ZX81, Spectrum, and Oric.

It is a Waltam W174 clock radio cassette recorder at about £36. – **Neil Olner, Thorne, Doncaster.**

● Thank you to everyone who's written in telling us which cassette recorders work with the Electron. Here at *Electron User* we use a Pye audio data recorder D6600/35P. We get tapes in all sorts of conditions and at all recording levels and the Pye recorder does a great job.

Code breaking with the family

FIRSTLY, may I congratulate R.A. Waddilove on his excellent program "Code Breaker".

The only problem is, once you have started breaking a code, everybody in the house feels the necessity to offer expert advice on what the next guess should be!

To make life easier, I've written a few extra lines to give each line of guesses a number.

At least now you'll know which line your committee of experts is referring to, when they make comparisons and eliminations.

All you do is delete line 760 and add the following:

```
  105 PROCnumbers
  107 VDU4
  690 MOVE 0,i:DRAW 1160,i
  710 MOVE 0,96:DRAW 1160,9
6
  730 MOVE 0,96:DRAW 0,976
 1860 DEFPROCnumbers
 1870 COLOUR 7
 1880 VDU5:MOVE 80,255
 1890 FOR y%=1 TO 12
 1900 IF y%)=10 THEN PLOT 0
,-64,0
 1910 PRINT;y%;
 1920 PLOT 0,-60,64
 1930 NEXT y%
 1940 SOUND 1,-15,50,5
 1950 ENDPROC
```

– **Tony Farmer, Ditton, Kent.**

● Many thanks for the additional lines, Mr Farmer. They really do help, though, of course, here at *Electron User* we're all too busy to play games!

Not just flung together

JUST out of curiosity I decided to solve the illustration accompanying Roland Waddilove's "Crack the code!" in the June issue of Electron User.

The solution is possible from the illustration (red, blue, green, red, red) and it just goes to show that these articles aren't just flung together but obviously somebody has taken some care in printing an actual game to accompany the text. – **Nigel Shelton, Gt. Yarmouth, Norfolk.**

Mysterious assembler . . .

I HAVE read somewhere in your excellent magazine that my Electron has a built-in assembler. How do I use it, and what does it do? – **Robert Treu, Hastings.**

● The assembler is a program that lives inside the operating system of the Electron and allows you to speak to the micro in its own language, machine code.

As for how to use it, we plan to run a series on machine code. If you can't wait then you might try the following books:

Assembly Language on the Electron, by Ferguson and Shaw, published by Addison Wesley.

Electron Assembly Language, by Bruce Smith, published by Shiva.

Electron Machine Code for Beginners, by Ian Sinclair, published by Granada.

Improve your character!

FIRST of all I'd like to thank you for a magazine that covers the WHOLE spectrum (ahem) of uses for an excellent machine.

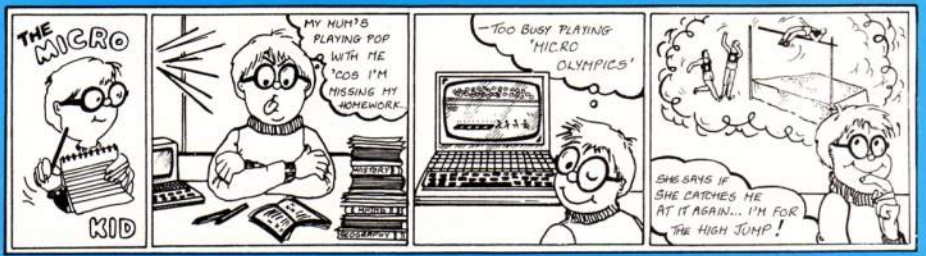
Secondly, although I found your character definer program (Page 44, March issue) to be of great help, I sometimes felt the need to have the ability to save and load character sets.

This facility can be obtained by adding the following lines:

```
  193 IF G$="S" THEN MODE6:
PROCSV:MODE1:PROCSCREENPLOT
  195 IF G$="L" THEN MODE6:
PROCLD:MODE1:PROCSCREENPLOT
  935 PRINT TAB(2,17) "To s
ave a character set press '
S'"
  937 PRINT TAB(2,19) "To l
oad a character set press '
L'"
 1030 DEFPROCSV
 1040 PRINT:PRINT:PRINT
 1050 *SAVE CHAR 0C00 0CF1
 1060 PRINT "Press any key
to continue":G$=GET$
 1070 ENDPROC
 1080 DEFPROCLD
 1090 PRINT TAB(0,10)"Pleas
e position the character fi
le"
 1100 *LOAD "CHAR" 0C00
 1110 PRINT"Press any key t
o continue":G$=GET$
 1120 ENDPROC
```

– **Simon Martin, Halifax.**

● Many thanks for the listing which adds a new dimension to the program. It's always nice to hear from readers who have improved or adapted our programs.



FIRST BYTE

ELECTRON JOYSTICK INTERFACE

Printer Interface OUT NOW
Uses normal BBC printer commands
No software required!

ELECTRON JOYSTICK INTERFACE

Electron users! This is the add-on everyone wants. It's the new Electron switched joystick interface from First Byte - available now with *free* conversion tape that vastly extends your game range right away.

The interface operates with all 'Atari-style' 9-pin joysticks, and its many advanced design features put it way out in front for quality and reliability. That's why, to date 15 major software houses are already bringing out games that work directly with the First Byte Electron Joystick Interface - and many more are sure to follow.

FREE conversion tape - play all these top games right now

Every Electron Joystick Interface comes with a free conversion tape, so you can use some of the most popular games around right now:

- Killer Gorilla
- Moonraider
- Positron
- Croaker
- Swoop
- Bandits at 3 o'clock
- Escape from Moonbase Alpha
- Cybertron Mission
- Cylon Attack
- Kamakazi
- Chuckie Egg
- Atom Smasher
- Alien Break In
- Birds of Prey
- Galaxy Wars
- City Defence
- Monsters
- Pool
- Pengwyn
- Lunar Rescue
- Bugblaster
- Blagger
- Bed Bugs
- Alien Dropout
- Daredevil Dennis
- Snooker
- Diamond Mine
- Vortex

The conversion tape also allows you to configure most other games for joystick control.

Games specially for the First Byte Interface

All these major software houses are bringing out games that work with the First Byte Electron Interface, with no conversion tape needed.

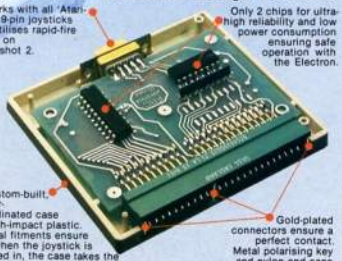
- Alligata
- A & F
- Program Power
- Superior
- Romik
- Bug-Byte
- Visions
- Virgin
- Aardvark
- Optima
- Postern
- Phoenix
- Software Invasion
- MRM
- Beebug-soft

The First Byte Electron Joystick Interface - available *now* from all good dealers and W. H. Smith.

Look at these advanced design features.

Works with all 'Atari-style' 9-pin joysticks and utilises rapid-fire mode on Quickshot 2.

Only 2 chips for ultra-high reliability and low power consumption ensuring safe operation with the Electron.



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